

Expiration Date: July 28, 2016

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**HAZARDOUS WASTE MANAGEMENT ACT  
PERMIT FOR  
DANGEROUS AND MIXED WASTE MANAGEMENT  
AT THE BREMERTON NAVAL COMPLEX**

Department of Ecology, Nuclear Waste Program  
3100 Port of Benton Blvd.  
Richland, Washington 99354  
Telephone: (509) 372-7950

This Permit is issued in accordance with the applicable provisions of the Hazardous Waste Management Act, Chapter 70.105 & Chapter 70.105D Revised Code of Washington (RCW), and the regulations promulgated thereunder in Chapter 173-303 Washington Administrative Code (WAC).

**PERMITTEE:** United States Department of Defense, Department of the Navy  
for the Bremerton Naval Complex

Site address

1400 Farragut Avenue, Bremerton, Washington 98314-5001

EPA/State identification number **WA2 17002 3418**

This Permit is effective as of July 28, 2006, and shall remain in effect until July 28, 2016 unless revoked and reissued, modified, or terminated under WAC 173-303-830(3) and (5) or continued in accordance with WAC 173-303-806(7).

**ISSUED BY:** WASHINGTON STATE DEPARTMENT OF ECOLOGY

\_\_\_\_\_  
Jane Hedges, Program Manager  
Nuclear Waste Program  
Washington State Department of Ecology

\_\_\_\_\_  
Date

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**INTRODUCTION**

Permittee: U.S. Department of Defense, Department of the Navy for the Bremerton Naval Complex

EPA/State identification number: **WA2 17002 3418**

Pursuant to Chapter 70.105 & Chapter 70.105D Revised Code of Washington (RCW), the Hazardous Waste Management Act of 1976, as amended, and regulations codified in Chapter 173-303 Washington Administrative Code (WAC), a permit is issued to the Permittee to operate a Mixed Waste Storage Facility (MWSF) located at 1400 Farragut Avenue, Bremerton, Washington 98314-5001; complete closure of buildings 944/982; and complete Corrective Action requirements.

The Permittee must comply with all terms and conditions set forth in this Permit and in Permit Attachments AA through II. When the Permit and the Permit Attachments conflict, the wording of this Permit shall prevail.

This Dangerous Waste Permit is based on applicable state regulations and statutes in effect on the date of permit issuance and those federal regulations incorporated by reference into these state regulations. Periodically, the state initiates changes to Chapter 70.105 & Chapter 70.105D Revised Code of Washington (RCW), the Hazardous Waste Management Act of 1976, or the implementing regulations. The Permittee may implement more stringent state or federal standards at any time, unless doing so would require Ecology review and approval of construction design or MWSF procedures, or would conflict with requirements of this Permit. For less stringent provisions, the Permittee must request and receive approval for a permit modification before applying the less stringent requirements.

Any procedure, method, data, or information contained in this document that relates to the radioactive source, byproduct material, and/or special nuclear components of mixed waste (as defined by the Atomic Energy Act of 1954, as amended) is not included for the purpose of regulating such components under the authority of this Permit, Chapter 70.105 and/or Chapter 70.105D RCW.

The RCRA Permit issued to the Permittee consists of two components – the Dangerous Waste portion issued by Ecology pursuant to WAC 173-303-806, and the Hazardous & Solid Waste Amendment (HSWA) portion issued by EPA pursuant to 40 CFR Part 270. Use of the term “Permit” within the Dangerous Waste portion of the Permit shall refer to the Dangerous Waste requirements. Terms used in this Permit shall have their standard meaning, except where this Permit specifically states otherwise.

This Dangerous Waste Permit is based upon the administrative record, as required by WAC 173-

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1 303-840. The Permittee's failure in the application or during the permit issuance process to fully  
2 disclose all relevant facts or the Permittee's misrepresentation of any relevant facts at any time  
3 are grounds for the termination or modification of this Permit and/or initiation of an enforcement  
4 action, including criminal proceedings. The Permittee must inform Ecology of any deviations  
5 from the permit conditions. In particular, the Permittee must inform Ecology of any proposed  
6 changes that might affect the ability of the Permittee to comply with applicable regulations and  
7 permit conditions or that alter any of the conditions of this Permit in any way.

8  
9 Ecology has primary enforcement authority for all conditions of this Permit. Any challenge of a  
10 permit condition must be appealed to the Pollution Control Hearings Board in accordance with  
11 WAC 173-303-845. The EPA has the authority to enforce any condition in this Permit that is  
12 based on federal regulations for which the State of Washington's dangerous waste management  
13 program is authorized.

14  
15 In the event that Ecology does not maintain its authorization for the federal RCRA program, then  
16 the EPA becomes the regulatory authority for all permit conditions except those that are state-  
17 only requirements. In that event, EPA will issue its own separate permit.

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**BRIEF OVERVIEW**

The U.S. Department of Defense, Department of the Navy, Puget Sound Naval Shipyard & Intermediate Maintenance Facility (PSNS & IMF) command submitted a final status dangerous waste permit application to demonstrate how it intends to comply with the requirements of Chapter 173-303 WAC for operation of a dangerous and mixed waste storage facility.

**Mixed Waste Storage Facility (MWSF)-** MWSF, Building 1002, is a rectangular building, 54 feet by 42 feet in size, located south of Farragut Avenue between Buildings 818 and 455. The MWSF was designed and constructed specifically to store mixed waste in accordance with Chapter 173-303 WAC. The MWSF is strictly a storage area with no capabilities for treatment. The MWSF stores mixed waste generated as a result of radiological work on nuclear powered vessels at naval facilities in support of the Naval Nuclear Propulsion Program (NNPP). Mixed wastes can be received from active ships; generated from shipyard production work including removal and installation of components on ships; on-ship and off-ship repair of components; and decommissioning and recycling (demolition) of ships. The MWSF also receives waste generated during shipyard waste processing, laboratory analysis, and on-site demolition.

The Permittee maintains a Site Treatment Plan (STP) for the mixed that is generated at naval facilities and managed by PSNS & IMF. Specific information is provided within the STP on the waste streams managed, on-site processing (radiological release determination, segregation, decontamination, sampling, and characterization) performed prior to containerized storage at the MWSF, and off-site treatment that is required prior to disposal. The PSNS & IMF STP is updated yearly and provided to Ecology for review and approval pursuant to the Federal Facility Compliance Act of 1992.

In support of this Permit, the Permittee submitted to Ecology, its "Environmental Assessment and Finding of No Significant Impact for Proposed MWSF" which was completed in March 1994 to satisfy its National Environmental Policy Act (NEPA) requirements. Ecology has reviewed this document and proposes a Determination of Non-significance (DNS) to fulfill the State of Washington's State Environmental Policy Act (SEPA) requirements. In addition, Ecology completed the SEPA Checklist and will attach it to the DNS.

This Permit establishes requirements for the MWSF such as: procedures and standards of waste analysis, waste receipt, waste storage, and MWSF closure. In addition, this Permit contains requirements for personnel training, general MWSF inspection, emergency planning, record keeping, and reporting. Procedures are included in this Permit for establishing specific operating limits, inspections, safety measures and record keeping requirements that will ensure general performance standards are met.

**Building 944/982 Closure-** This Permit also establishes final status closure requirements for Building 944/982 in accordance with Ecology's approved closure plan dated October 31, 2005. Building 944/982 operated as interim status Treatment, Storage, and Disposal Facility that was

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1 used for the storage of liquid and solid hazardous waste, as well as off-specification and surplus  
2 chemicals, until they were transported off-site for treatment, if necessary, and disposal. Building  
3 944/982 closure plan was previously approved by Ecology under interim status [WAC 173-303-  
4 805] it is being closed under final status authority of WAC 173-303-610 and WAC 173-303-630  
5 through permit condition III.B.3. Building 944/982 is scheduled for RCRA closure in 2006.  
6 After the Permittee completes certification of closure according to the approved closure plan  
7 pursuant to this Permit, Building 944/982 will be operated as a Less Than 90-Day hazardous  
8 waste accumulation area in accordance with WAC 173-303-200 requirements. This Permit does  
9 not authorize any treatment, storage or disposal of dangerous or mixed waste at Building  
10 944/982.

11  
12 **Corrective Action Overview-** Corrective action requirements for the entire contiguous property  
13 of the Facility are also addressed in this Permit. Corrective Action means any activities  
14 including investigations, studies, characterizations, and corrective measures undertaken in whole  
15 or in part to fulfill the requirements of WAC 173-303-646. The Facility has been listed on the  
16 National Priorities List (NPL) pursuant to the Comprehensive Environmental Response,  
17 Compensation and Liability Act (CERCLA), and it has entered into a Federal Facilities  
18 Compliance Act (FFCA) with Ecology and EPA. Six Operable Units (OU) are identified in the  
19 Permit. Five OU's are being remediated according to the requirements of their respected  
20 Records of Decision (RODs) pursuant to CERCLA. Ecology has determined that the Permittee  
21 may demonstrate compliance with the requirements of WAC 173-303-646 through compliance  
22 with these CERCLA requirements. One additional Operable Unit is being remediated under the  
23 Model Toxics Control Act (MTCA) according to the requirements of a Cleanup Action Plan and  
24 a compliance schedule. Ecology has determined that the Permittee may demonstrate compliance  
25 with the requirements of WAC 173-303-646 for the MTCA cleanup through adhering to the  
26 compliance schedule in permit condition V.B.2 of this Permit. Upon completion of work at the  
27 Operable Units identified above, Ecology will determine if all corrective action requirements  
28 have been met or if additional corrective action is required pursuant to WAC 173-303-64620(1)  
29 and (2).

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**LIST OF ATTACHMENTS**

The documents listed below are incorporated in their entirety into this Permit. Some of the documents are excerpts from the Permittee's Dangerous Waste permit application. Ecology has, as deemed necessary, modified specific language in the Permit Attachments. These modifications are described in the permit conditions (Parts I through V), and thereby supersede the language of the permit application language incorporated by reference. The incorporated Permit Attachments are enforceable conditions of this Permit, as modified by the specific permit conditions.

Attachment AA	Part A of the permit application, the Dangerous Waste Permit Forms
Attachment BB	Topographic Maps (Section B-2 and Figures B-1, B-3 and B-4 of the permit application) and Typical Arrangement inside MWSF (Figures D-1, D-2 and D-3 of the permit application)
Attachment CC	Mixed Waste Analysis Plan (Section C of the permit application)
Attachment DD	Inspection Record (Attachment F-1 of the permit application)
Attachment EE	Training Matrix (Table 8.1 of Section H of the permit application)
Attachment FF	MWSF (Building 1002) Closure Plan and Closure Plan Attachments FF-1 & FF-2 (Attachments to Section I of the permit application)
Attachment GG	Mixed Waste Storage Facility Contingency Plan (Attachment G-1 of the permit application)
Attachment HH	Schedule for Remedial Action for Problems Revealed (Section F-2c of the permit application)
Attachment II	Definition of Facility, Figures 1 & 2

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**DEFINITIONS**

All definitions contained in the following are hereby incorporated, in their entirety, by reference into this Permit: Chapter 70.105 & Chapter 70.105D RCW; Chapter 173-303 WAC; and Chapter 173-340 WAC, as undertaken in whole or in part to fulfill the role of WAC 173-303-646. If any definitions in the listed rules and laws differ from the definitions in this Permit, the Permit's definitions prevail.

Where terms are not defined in the regulations or the Permit, the meaning associated with such terms are defined by a standard dictionary reference or the generally accepted scientific or industrial meaning of the term.

Some terms are specifically defined in Part V, Corrective Action, for the purposes of that part of this Permit.

For purposes of this Permit, except where a specific definition applies under Part V, Corrective Action, the following definitions apply:

“Agencies” means the U.S. Environmental Protection Agency, Region 10, and the Washington State Department of Ecology.

“Dangerous Waste” means those solid wastes designated in WAC 173-303-070 through WAC 173-303-100 and dangerous, or extremely hazardous or mixed waste.

“Mixed Waste Storage Facility (MWSF)” means Building 1002 used to manage dangerous and/or mixed wastes. The location and description of Building 1002 is set forth in Permit Attachment AA of this Permit.

“Days” means calendar days unless otherwise defined for a condition or section of this Permit.

“Ecology” means the Washington State Department of Ecology (with the address as specified on page one of this Permit).

“EPA” means the U.S. Environmental Protection Agency, Region 10.

“Facility” for purposes of this Permit, the “Facility” shall be the Bremerton Naval Complex, as depicted in Figures 1 & 2 of Permit Attachment II according to permit condition II.H.

“Occurrence” means an accident, including continuous or repeated exposure to conditions, which result in bodily injury or property damage that the owner or operator neither expected nor intended to occur.

“Permit” means the dangerous waste component of the RCRA Permit which is issued by the Washington State Department of Ecology pursuant to Chapter 70.105 & Chapter 70.105D RCW and Chapter 173-303 WAC,.

“Mixed Waste Storage Facility” means Building 1002 (MWSF).

“Waste Profile” means a detailed chemical, physical, and/or biological analysis of a dangerous waste.

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**LIST OF ACRONYMS**

1

2

AOC	Area of Concern
ASTM	American Society for Testing and Materials
BNC	Bremerton Naval Complex
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CIA	Controlled Industrial Area
DNS	Determination of Non-significance
DW	Dangerous Waste
Ecology	Washington State Department of Ecology
EHW	Extremely Hazardous Waste
EPA	U.S. Environmental Protection Agency
EPDM	Ethylene Propylene Diene Monomer
FEMA	Federal Emergency Management Agency
FFCA	Federal Facilities Compliance Act
FISC	Fleet Industrial Supply Center
GPM	Gallons Per Minute
HSWA	Hazardous & Solid Waste Amendment
IRR	Inactivation, Recycling, Reactor Compartment Disposal
LDR	Land Disposal Restriction
LLRW	Low Level Radioactive Waste
MSDS	Material Safety Data Sheet
MTCA	Model Toxics Cleanup Act
MWAP	Mixed Waste Analysis Plan
MWMP	Mixed Waste Management Plan
MWPP	Mixed Waste Profile Portfolio
MWIF	Mixed Waste Information Form
MWSF	Mixed Waste Storage Facility
NEPA	National Environmental Policy Act
NNPP	Naval Nuclear Propulsion Program
NPL	National Priorities List
OU	Operable Unit
PCB	Polychlorinated Biphenyls
PPE	Personal Protective Equipment
psf	Pounds Per Square Foot
psi	Pounds Per Square Inch
PSNS & IMF	Puget Sound Naval Shipyard & Intermediate Maintenance Facility
QP	Laboratory Quality Plan

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RAMT	Radioactive Material Tag
RCRA	Resource Conservation and Recovery Act Of 1976
RCW	Revised Code of Washington
QA/QC	Quality Assurance / Quality Control
ROD	Record of Decision
SAR	Sample Analysis Request
SEPA	State Environmental Policy Act
STP	Site Treatment Plan
SWMU	Solid Waste Management Unit
TBG	Treatment by Generator
TCLP	Toxicity Characteristic Leaching Procedure
TSCA	Toxic Substances Control Act
TSDF	Treatment, Storage, and Disposal Facility
TWD	Technical Work Document
UHWI	Uniform Hazardous Waste Manifest
USDOT	United States Department of Transportation
VOC	Volatile Organic Compound
WAC	Washington Administrative Code

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## **PART I – STANDARD CONDITIONS**

### **I.A. EFFECT OF PERMIT**

Subject to WAC 173-303-810(8)(a), compliance with this Permit constitutes compliance, for the purposes of enforcement, with Chapter 173-303 WAC. Issuance of this Permit does not convey any property rights of any sort or any exclusive privilege. [WAC 173-303-810(8)(b)] Issuance of this Permit does not authorize any injury to persons or property, any invasion of other private rights, or any infringement of state or local law or regulations. [WAC 173-303-810(8)(c)]

### **I.B. STANDARD PERMIT CONDITIONS**

I.B.1. The Permittee shall comply with any self-implementing statutory provisions, which according to the requirements of state law, are automatically applicable to the Permittees' dangerous and/or mixed waste activity, notwithstanding the conditions of this Permit.

#### **I.B.2. Equivalent materials/information**

If certain equipment, materials, and administrative information (such as names, phone numbers, and addresses) are specified in this Permit, the Permittee is allowed to use an equivalent or superior item. Use of such equivalent or superior items shall not be considered a modification of this Permit unless otherwise required by WAC 173-303-830. However, the Permittee must place the revision in the operating record (prior to its implementation) accompanied by a narrative explanation and the date the revision became effective. Ecology may judge the soundness of the revision during inspections of the MWSF and take appropriate action. The format of tables, forms, and the orientation of furniture on figures are not subject to the requirements of this Permit, and may be revised at the Permittee's discretion.

### **I.C. PERMIT ACTIONS**

I.C.1. This Permit may be modified, revoked, or terminated by Ecology for cause as specified in WAC 173-303-830(3), (4), and (5). The filing of a request for a permit modification, revocation and reissuance, or termination, or the notification of planned changes or anticipated noncompliance on the part of the Permittee shall not stay the applicability or enforceability of any condition. [WAC 173-303-810(7)]

I.C.2. This Permit may be renewed as specified in WAC 173-303-810(3) and permit condition I.E.2. Ecology review of any application for a permit renewal will consider improvements in the state of control and measurement technology, as well as changes in applicable regulations.

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1  
2 I.C.3. Permittee Initiated Modifications  
3

4 Permit modification at the request of the Permittee must comply with WAC 173-  
5 303-830(4) and Condition I.C.4. The permit modification request must include  
6 draft page changes to this Permit and its Permit Attachments, and supporting  
7 documentation necessary to justify the proposed permit modification(s). A draft  
8 of affected permit conditions and Permit Attachments with changes clearly noted  
9 in red-line strikeout must be submitted to Ecology for review and approval as part  
10 of the permit modification request.

11  
12 I.C.4. Requirement for Revised Permit  
13

14 Within forty-five (45) days of the effective date of any permit modification, the  
15 Permittee shall provide Ecology with updated permit pages that reflect the  
16 approved modification, if not already reflected in the pages changed and  
17 submitted in the original permit modification request.  
18

19 I.D. SEVERABILITY  
20

21 I.D.1. Effect of Invalidation  
22

23 The provisions of this Permit are severable. If any provision of this Permit or the  
24 application of any provision of this Permit to any circumstance is held invalid, the  
25 application of such provision to other circumstances and the remainder of this  
26 Permit shall not be affected thereby. Invalidation of any state or federal statutory  
27 provision which forms the basis for any condition of this Permit does not affect  
28 the validity of any other state or federal statutory or regulatory basis for said  
29 condition.  
30

31 I.D.2. If a condition of this Permit is stayed for any reason, for that condition the  
32 Permittee must continue to comply with the related applicable interim status  
33 standards in WAC 173-303-400 until final resolution of the stayed condition. The  
34 only exception is if Ecology determines compliance with such interim status  
35 standards are technologically incompatible with compliance with permit  
36 conditions that have not been stayed.  
37

38 I.E. DUTIES AND REQUIREMENTS  
39

40 I.E.1. Duty to Comply  
41

42 The Permittee shall comply with all conditions of this Permit [WAC 173-303-  
43 810(2)] except to the extent and for the duration such noncompliance is  
44 authorized by an emergency permit issued under WAC 173-303-804. Any permit  
45 noncompliance, other than noncompliance authorized by an emergency permit,

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constitutes a violation of Chapter 173-303 WAC and/or RCRA and is grounds for:  
a) enforcement action; b) termination of this Permit, WAC 173-303-830(5)(a); c)  
revocation and re-issuance of this Permit; d) modification of this Permit; or e)  
denial of a permit renewal application.

I.E.2. Duty to Reapply

To continue an activity allowed by this Permit after this Permit's expiration date, or if the Permittee is required by Ecology pursuant to Chapter 173-303 WAC to conduct or continue post-closure care or corrective action after this Permit's expiration date, the Permittee must submit to Ecology a complete permit application at least 180 days before this Permit's expiration date. Permit application requirements are in WAC 173-303-806. Ecology may require the Permittee to submit information in order to establish permit conditions to protect human health and the environment, and comply with WAC 173-303-806(11)(d).

I.E.3. Duty to Halt or Reduce Activity

A Permittee who has not complied with this Permit, and who subsequently is subject to enforcement actions, may not argue that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Permit. [WAC 173-303-810(4)]

I.E.4. Duty to Mitigate

The Permittee must take all steps required by Ecology to minimize or correct any adverse impacts on the environment resulting from non-compliance with this Permit. [WAC 173-303-810(5)] Such mitigation shall not be a defense to enforcement.

I.E.5. Proper Operation and Maintenance

The Permittee shall at all times properly operate and maintain all facilities and all systems of treatment and control which are installed or used by the Permittee to achieve compliance with the conditions of this Permit. Proper operation and maintenance includes effective performance, adequate operator staffing and training, and adequate laboratory and process controls, including appropriate quality assurance/quality control (QA/QC) procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems only when necessary to achieve compliance with the conditions of this Permit. [WAC 173-303-810(6)]

I.E.6. Duty to Provide Information

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1 The Permittee shall furnish to Ecology, within a reasonable time, any information  
2 which Ecology may request to determine whether cause exists for modifying,  
3 revoking and reissuing, or terminating this Permit, or to determine compliance  
4 with this Permit. The Permittee shall also furnish to Ecology, upon request,  
5 copies of records required to be kept by this Permit (permit condition I.K). [WAC  
6 173-303-810(9)]  
7

8 I.E.7. Inspection and Entry  
9

10 Pursuant to WAC 173-303-810(10), the Permittee shall allow representatives of  
11 Ecology upon the presentation of proper credentials, to:  
12

13 I.E.7.a. Enter at reasonable times upon the Permittee's premises where the  
14 regulated MWSF is located or activity is conducted, or where the  
15 Permittee must keep records under the conditions of this Permit;  
16

17 I.E.7.b. Have access to and copy, at reasonable times, any records that Permittee  
18 must keep under the conditions of this Permit;  
19

20 I.E.7.c. Inspect at reasonable times any facilities, equipment (including monitoring  
21 and control equipment), practices, or operations regulated or required  
22 under this Permit; and  
23

24 I.E.7.d. Sample or monitor, at reasonable times, for the purposes of assuring  
25 permit compliance or as otherwise authorized by Chapter 173-303 WAC,  
26 including sections of 40 CFR Part 264 that are incorporated by reference  
27 into Chapter 173-303 WAC, any substances or parameters at any location  
28 under the conditions of this Permit.  
29

30 I.E.8. Reporting changes in MWSF operations, ownership, anticipated or other  
31 noncompliance with this Permit, and other information pursuant to WAC 173-  
32 303-810(14).  
33

34 I.E.8.a. The Permittee must give advance notice to Ecology of any planned  
35 changes in the permitted MWSF or activity that may result in  
36 noncompliance with permit requirements or conditions.  
37

38 I.E.8.b. The Permittee must give notice as soon as possible of any planned  
39 physical alterations or additions to the MWSF. Such physical alterations  
40 or additions require a permit modification.  
41

42 I.E.8.c. Whenever the Permittee becomes aware that it failed to submit relevant  
43 facts in the permit application or submitted incorrect information in a  
44 permit application or in any report to Ecology, the Permittee must  
45 promptly submit such facts or information to Ecology.

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I.E.8.d. Monitoring results (including monitoring of the MWSF's impacts as required by the applicable sections of Chapter 173-303 WAC) must be reported at the intervals specified in WAC 173-303-810.

I.E.8.e. Reports of permit compliance or noncompliance or any progress reports on interim and final permit requirements contained in any compliance schedule must be submitted no later than fourteen days following each scheduled date.

I.E.8.f. The Permittee must report all instances of permit noncompliance at the MWSF which are not already reported under "immediate reporting," monitoring reports, and compliance schedules. The reports must contain the information listed in WAC 173-303-810(14)(f)(i) through (iii).

I.E.8.g. In addition, the following reports are required when appropriate:

I.E.8.g.i. Mixed waste manifest discrepancy report as required by WAC 173-303-370(4);

I.E.8.g.ii. Unmanifested mixed waste report as required by WAC 173-303-390(1);

I.E.8.g.iii. Annual report as required by WAC 173-303-390(2).

I.E.8.h. Ecology may require the Permittee to establish and maintain an information repository at any time, based on the factors set forth in WAC 173-303-281(6)(b). The information repository will be governed by the provisions in WAC 173-303-281(6)(c) through (f).

#### I.F. MONITORING, RECORDS, AND REPORTING

I.F.1. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. [WAC 173-303-810(11)(b)] The method used to obtain a representative sample of the waste to be analyzed must be the appropriate method from WAC 173-303-110, or an equivalent method approved by Ecology. Laboratory methods must be those specified in WAC 173-303-110(3)(a), other alternate methods approved in this Permit (e.g., Permit Attachment CC), or an equivalent method in accordance with permit condition I.F.2. of this Permit.

I.F.2. The Permittee may substitute analytical methods that are equivalent or superior to those specifically approved for use in this Permit in accordance with the following: [WAC 173-303-110]

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1 I.F.2.a. The Permittee must submit to Ecology a request for substitution of an  
2 analytical method(s) specifically approved for use in this Permit. The  
3 request shall provide information demonstrating that the proposed  
4 method(s) requested to be substituted is equivalent or superior in terms of  
5 sensitivity, accuracy, and precision (i.e., reproducibility); and  
6

7 I.F.2.b. The Permittee receives a written approval from Ecology for the  
8 substitution of an analytical method(s). Such approval shall not require a  
9 permit modification under WAC 173-303-110.  
10

11 I.F.3. Pursuant to WAC 173-303-810(11)(d), records of monitoring information shall  
12 specify:  
13

14 I.F.3.a. The date, exact place, and times of sampling or measurements;  
15

16 I.F.3.b. The individual(s) who performed the sampling or measurements;  
17

18 I.F.3.c. The date(s) analyses were performed;  
19

20 I.F.3.d. The individual(s) who performed the analyses;  
21

22 I.F.3.e. The analytical techniques or methods used; and  
23

24 I.F.3.f. The results of such analyses, including the QA/QC results and  
25 requirements.  
26

27 I.F.4. The Permittee shall immediately report to Ecology any release, fire, explosion,  
28 natural disaster, or incident of noncompliance with this Permit that may endanger  
29 human health or the environment. This reporting shall meet the requirements in  
30 WAC 173-303-360(2)(d).  
31

32 I.F.5. Within fifteen (15) calendar days of an incident that requires implementation of  
33 the Contingency Plan (Permit Attachment GG), the Permittee shall submit a  
34 written report of the incident to Ecology meeting the requirements of WAC 173-  
35 303-360(2)(k) and WAC 173-303-810(14)(f).  
36

37 I.F.6. The Permittee shall report to Ecology all incidents of noncompliance with this  
38 Permit, other than incidents specified in permit conditions I.F.3, I.F.4, and I.F.5,  
39 every three (3) months. These reports shall meet the requirements in WAC 173-  
40 303-810(14)(g).  
41

42 I.F.7. The Permittee must immediately report any noncompliance which may endanger  
43 health or the environment. Information must be provided orally to Ecology as  
44 soon as the Permittee becomes aware of the circumstances. [WAC 173-303-  
45 810(14)(f)]

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I.F.8. A written submission must also be provided within five (5) days of the time the Permittee becomes aware of the circumstances. Ecology may waive the written submission requirement in favor of a written report, to be submitted within fifteen (15) days. The written submission must contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [WAC 173-303-810(14)(f)]

#### I.G. COMPLIANCE NOT CONSTITUTING DEFENSE

Notwithstanding permit condition I.A of this Permit, compliance with the terms of this Permit does not constitute a defense to any order issued or any action brought under any state or federal omnibus laws governing protection of public health or the environment. However, compliance with terms of this Permit does constitute a defense to any action alleging failure to comply with applicable standards upon which this Permit is based, or failure to operate under a permit required by WAC 173-303-800 with respect to those activities authorized by this Permit.

#### I.H. TRANSFER OF PERMITS

This Permit may be transferred by the Permittee to a new owner or operator only if this Permit has been modified or revoked and reissued pursuant to WAC 173-303-830(2).

#### I.I. PERMIT CONTINUATION

This Permit and all its conditions will remain in effect beyond this Permit's expiration date until Ecology has made a final permit determination (issuing or denying a new permit) if the Permittee has submitted a timely, complete application in compliance with permit condition I.E.2, and, through no fault of the Permittee, Ecology has not made a final permit determination as set forth in WAC 173-303-840. If the Permittee fails to submit a timely, complete application as required under permit condition I.E.2 then those permit conditions necessary to protect human health and the environment will remain in effect beyond this Permit's expiration date until Ecology terminates the conditions.

#### I.J. REPORTS, NOTIFICATIONS, AND SUBMISSIONS

I.J.1. The Permittee must sign all applications, reports, or information submitted to Ecology in accordance with WAC 173-303-810 (12) and must certify them according to WAC 173-303-810(13).

I.J.2. The Permittee shall submit all reports, notifications, or other submissions that are required by this Permit to Ecology via certified mail or hand-delivered to:

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1                   Program Manager, Nuclear Waste Program  
2                   Department of Ecology  
3                   3100 Port of Benton Boulevard  
4                   Richland, Washington 99354-1670  
5                   Telephone: (509) 372-7950  
6

7                   The phone number and address may change, and such changes will be provided  
8                   by Ecology. Such changes will not require a permit modification.  
9

10           I.J.3. The annual report required by WAC 173-303-390(2) may be submitted  
11           electronically in accordance with Ecology's electronic reporting instructions.  
12

13   I.K. FACILITY RECORDKEEPING  
14

15           The Permittee shall maintain a written operating record in accordance with WAC 173-  
16           303-380. Information must be recorded, as it becomes available, and maintained in the  
17           operating record until closure of the MWSF.  
18

19   I.L. CONFIDENTIAL INFORMATION  
20

21           Any information submitted by the Permittee to Ecology may be claimed as confidential  
22           by the Permittee in accordance with applicable provisions of WAC 173-30-810(15).  
23

24   I.M. PERMIT RENEWAL  
25

26           If the Permittee wishes to continue the activities authorized by this Permit beyond this  
27           Permit's expiration date, the Permittee must reapply for a final facility permit pursuant to  
28           WAC 173-303-806.  
29

30   I.N. PERMIT ACTIONS  
31

32           I.N.1. This Permit may be modified, revoked and reissued, or terminated for cause, as  
33           specified in WAC 173-303-840(10).  
34

35           I.N.2. The filing of a request by the Permittee for a permit modification, revocation and  
36           re-issuance, or termination or a notification of planned changes or anticipated  
37           noncompliance does not stay any permit condition.  
38

39           I.N.3. Permit modification at the request of the Permittee shall comply with procedures  
40           and other requirements of WAC 173-303-830.  
41  
42

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## **PART II – GENERAL FACILITY CONDITIONS**

### **II.A. GENERAL WASTE MANAGEMENT**

II.A.1. The Permittee is authorized to store containerized mixed wastes with dangerous waste numbers identified in the Part A Dangerous Waste Permit Forms (Permit Attachment AA) in the MWSF, including but not limited to mixed wastes generated on-site not managed pursuant to provisions of WAC 173-303-200. Any treatment, storage or disposal of dangerous and/or mixed waste by the Permittee not authorized by this Permit, WAC 173-303-200, or by Ecology under WAC 173-303-830(4)(e) (temporary authorizations) is prohibited. The Permittee is not authorized by this Permit to store Ignitable, Reactive, and/or Incompatible wastes.

II.A.2. The Permittee may accept the wastes specified in Permit Attachment AA (Part A/Forms 1 & 3) into the MWSF from off-site generators, including small quantity generators as long as the generator is owned or operated by the U.S. Department of Defense, Department of the Navy and has a valid State/EPA identification number. Mixed waste shall be shipped to the MWSF per the requirement of WAC 173-303-370.

II.A.3. All mixed waste received from off-site and mixed waste generated on-site which is held for over ninety (90) days must be managed by the Permittee only in Building 1002 (MWSF).

### **II.B. WASTE ANALYSIS**

II.B.1. The Permittee shall maintain a written Mixed Waste Analysis Plan (Permit Attachment CC).

II.B.2. The Permittee shall track receipt of containers as they enter or exit the MWSF pursuant to WAC 173-303-370. A description of and the quantity of each mixed waste received and managed in the MWSF shall be maintained in the operating record until closure of the MWSF. [WAC 173-303-380]

II.B.3. The Permittee must have in the operating record an accurate and complete waste profile certified and dated by the PSNS & IMF for every waste stream accepted at the MWSF as described in Permit Attachment CC; except that Permittee may hold unknown or unidentified wastes, for up to 30 days, while completing a waste profile as in permit condition II.B.4.

II.B.4. When the Permittee receives a suspect, or unidentified, waste stream, the Permittee must manage the waste according to the procedures in permit condition III.A. (Container Management) until a waste profile is completed or waste analysis shows the waste can be identified as an existing U.S. Department of the Navy profile. Within 30 days, the Permittee must complete the waste profile

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and/or determine that the waste can be identified as an existing U.S. Department of the Navy profile or returned to the generator.

## II.C. PREPAREDNESS AND PREVENTION

### II.C.1. Contingency Plan (Permit Attachment GG)

II.C.1.a. The Permittee shall maintain procedures for and conduct waste management activities subject to this Permit in emergencies or during sudden or non-sudden releases which threaten human health and the environment according to the Contingency Plan, included as Permit Attachment GG. [WAC 173-303-350(2)]

II.C.1.b. At all times, the Permittee must designate a qualified person as the emergency coordinator. [WAC-173-303-360(1)] The primary emergency coordinator shall be identified in the Contingency Plan (Permit Attachment GG) as the Incident Commander for the Federal Fire Department.

II.C.1.c. The Permittee must immediately carry out the provisions of the Contingency Plan (Permit Attachment GG) whenever there is a fire or an explosion at or affecting the MWSF, or a release of dangerous waste or constituents from the MWSF to air, soil, or surface or ground water.

II.C.1.d. The Permittee must maintain a list of all emergency equipment at the MWSF as specified in WAC 173-303-350(3)(e).

II.C.1.e. The Permittee must test and maintain the emergency equipment listed in the Contingency Plan (Permit Attachment GG) as specified in WAC 173-303-340.

II.C.1.f. The Permittee's Contingency Plan (Permit Attachment GG) shall meet requirements for protection to human health and the environment for potential impacts in the event of an emergency at the MWSF in accordance with WAC 173-303-340, -350, -360 and -806(4)(a)(vii).

II.C.1.g. The Permittee will immediately report any emergency event that poses a threat to human health or the environment as defined in the Contingency Plan (Permit Attachment GG) pursuant to WAC 173-303-360(2)(d).

II.C.1.h. The Permittee will maintain in the operating record summary reports and details of all incidents that require implementing the Contingency Plan (Permit Attachment GG) pursuant to WAC 173-303-380(1)(d) & 360(2)(k) and permit condition I.F.5.

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1 II.C.2. The Permittee shall ensure that operations at the MWSF in response to an  
2 emergency will not materially degrade the condition of the MWSF. If such  
3 degradation of the MWSF occurs, the Permittee will restore the MWSF to its  
4 operating condition.  
5

6 II.C.3. In an emergency, and in accordance with permit condition II.C.1.c, the Permittee  
7 shall follow the Contingency Plan (Permit Attachment GG). If a release of  
8 dangerous waste/waste constituents occurs the following steps will be taken:  
9

10 II.C.3.a. Determine the suspect environmental receptor for the constituents, based  
11 on the type of event;  
12

13 II.C.3.b. Obtain samples as necessary;  
14

15 II.C.3.c. Develop sampling parameters based on the waste streams involved in the  
16 event; and determine the method of analysis for each parameter; and  
17

18 II.C.3.d. Determine threshold levels at which clean-up actions must be initiated  
19 for each parameter. Threshold levels will be determined based on the  
20 Model Toxic Control Act (MTCA), Chapter 173-340 WAC.  
21

22 II.C.4. The Permittee shall comply with the preparedness and prevention requirements as  
23 described below in accordance with WAC 173-303-340:  
24

25 II.C.4.a. The Permittee shall maintain access to communications or alarms.  
26 Personnel must have immediate access to telephone or hand-held radios, a  
27 horn and strobe fire alarm system either actuated by the sprinkler system  
28 or manual pull station (the fire alarm will sound locally at the building,  
29 and at the Fire Department), and an alarm system automatically  
30 dispatching the Fire Department. [WAC 173-303-340(2)]  
31

32 II.C.4.b. The Permittee shall maintain portable fire extinguishers and spill kits at  
33 locations identified on Figure D-1 in Permit Attachment BB.  
34

35 II.C.4.c. The Permittee shall maintain a sprinkler system, automatically actuated  
36 by heat detectors and temperature sensitive sprinkler heads.  
37

## 38 II.D. SPILLS AND DISCHARGES INTO THE ENVIRONMENT

39

40 II.D.1. The Permittee must comply with the requirements of WAC 173-303-145  
41 including, but not limited to, notification, mitigation, and control measures  
42 specified in WAC 173-303-145(2) and (3) under the following circumstances:  
43

44 II.D.1.a. A spill or non-permitted discharge of dangerous waste occurs onto the  
45 ground, into the ground water, or into the surface water;

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1  
2 II.D.1.b. A spill or non-permitted discharge of dangerous waste results in  
3 emission into the air such that human health or the environment is  
4 threatened; or

5  
6 II.D.1.c. Other spills or discharges occur which threaten human health or the  
7 environment.  
8

9 II.E. PROCEDURES TO PREVENT HAZARDS

10  
11 II.E.2. The Permittee shall comply with the following security requirements: [WAC 173-  
12 303-310]

13  
14 II.E.2.a. The Permittee shall maintain a 24-hour surveillance system that is  
15 responsible for controlling access, and continuously monitors the MWSF.  
16 [WAC 173-303-310(2)(b)]  
17

18 II.E.2.b. The Permittee shall have posted at each entrance to the MWSF a sign  
19 containing the following information in accordance with WAC 173-303-  
20 310(2)(a):

21 Danger  
22 Hazardous Waste Storage Area  
23 Unauthorized Personnel Keep Out  
24 No Smoking Open Flames or Hot Work  
25 No Combustibles Within 5 Feet  
26

27 II.F. GENERAL INSPECTIONS

28  
29 II.F.1. The Permittee shall inspect the MWSF according to the inspection record in  
30 Permit Attachment DD. Inspections shall be at least weekly, and daily whenever  
31 containers of regulated wastes are added, removed, moved, or opened within the  
32 MWSF, or if there is a spill, fire, breach of security, or any human error or natural  
33 disaster that could affect the storage area. The Permittee shall maintain the  
34 completed inspection record in the MWSF operating record for a period of at least  
35 five years from the date of inspection (WAC 173-303-320).  
36

37 II.F.2. The Permittee shall remedy any problems revealed by inspections required by  
38 II.F.1 according to procedures and schedules in Permit Attachment HH.  
39

40 II.G. TRAINING PLAN

41  
42 II.G.1. The Permittee must maintain a written training plan and must conduct personnel  
43 training according to the plan, Permit Attachment EE (Training Matrix) of this  
44 Permit. [WAC 173-303-330]  
45

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1 II.G.2. The Permittee must maintain training documents and records as follows: [WAC  
2 173-303-330(3)]  
3

4 II.G.2.a. The Permittee shall ensure that all personnel requiring training under this  
5 plan must successfully complete training within six (6) months after being  
6 assigned to work in the MWSF as specified in WAC 173-303-330(1)(c).  
7

8 II.G.2.b. The Permittee shall ensure that all employees be supervised by trained  
9 personnel until the training is complete. Refresher training shall be  
10 provided to ensure personnel maintain an adequate level of proficiency.  
11

12 II.G.2.c. The Permittee shall ensure that all records of training for current  
13 employees, Training Plans, and course materials will be kept until the  
14 MWSF is formally and permanently closed as specified in WAC 173-303-  
15 330(2). Training records on former employees will be kept for at least  
16 three years from the date the employee last worked at the MWSF. Printed  
17 copies of these records are to be made available to state and federal  
18 regulators upon request.  
19

20 II.G.3. In the event the Permittee fails to comply with elements specified above for  
21 training, Ecology may require the Permittee to submit a revised Training Plan for  
22 review and modification, comment, or approval.  
23

## 24 II.H. DEFINITION OF FACILITY

25

26 II.H.1. The definition of Facility shall be as depicted in Permit Attachment II, Figure 1,  
27 as modified by Figure 2 with respect to Parcels "A" and "B," transfer of which  
28 has already been completed to the City of Bremerton. This Facility definition  
29 shall be enforceable prior to satisfaction of permit condition II.H.2.  
30

31 II.H.2. Within seven (7) days after the effective date of the transfer of Parcels "C" and  
32 "D" within Operable Unit D, the Permittee shall place in the Facility operating  
33 record documentation of the property transfer recording number issued by Kitsap  
34 County. The definition of Facility shall be as depicted in Permit Attachment II,  
35 Figure 1, as modified by Figure 2 with respect to Parcels "C" and "D." The  
36 Permittee shall also provide a copy of this legal description to Ecology, addressed  
37 to the contact in Permit Condition I.J.2. This submission shall include the  
38 certification statement in WAC 173-303-810(13). Changes to the definition of  
39 Facility pursuant to this permit condition shall not be subject to the permit  
40 modification requirements of WAC 173-303-830.  
41

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## **PART III- CONTAINER STORAGE**

### **III.A. CONTAINER MANAGEMENT**

III.A.1. The Permittee shall manage containerized wastes at the MWSF as follows: [WAC 173-303-630]

III.A.1.a. The Permittee shall ensure that all containers remain in good condition in accordance with WAC 173-303-630(2).

III.A.1.b. The Permittee shall ensure that all mixed waste is compatible with the container in which it is packaged in accordance with WAC 173-303-630(4).

III.A.1.c. The Permittee shall ensure that containers holding mixed waste must not be opened, handled, or stored in a manner which may rupture the container or cause it to leak. [WAC 173-303-630(5)(b)]

III.A.1.d. The Permittee shall ensure that mixed waste being shipped to and from off-site locations is conducted in accordance with applicable USDOT regulations.

III.A.1.e. The Permittee shall ensure that the maximum inventory of waste at the MWSF will not exceed the equivalent volume of 600 55-gallon drums.

III.A.1.f. The Permittee shall ensure containers will be kept closed during storage except when wastes are added or removed. [WAC 173-303-630(5)(a)]

III.A.1.g. The Permittee shall ensure that all containers shall be placed such that labels are visible from the aisle. Any unnecessary markings or labels shall be removed. At least 36 inches of aisle space shall be maintained between rows of containers pursuant to WAC 173-303-340(3). This criterion is included in the MWSF Inspection Record (Permit Attachment DD).

III.A.2. The Permittee shall comply with the container labeling practices at the MWSF as described below in accordance with WAC 173-303-630(3):

III.A.2.a. Each mixed waste container is clearly marked with the following information:

III.A.2.a.i. contents of the waste container (waste stream name and/or number);

III.A.2.a.ii. the generator's name and address;

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1  
2 III.A.2.a.iii. the hazards (major risks) associated with the waste; and

3  
4 III.A.2.a.iv. Ecology Dangerous Waste label.

5  
6 III.A.2.b. In addition, prior to shipment, each waste container shall be marked  
7 with the following:

8  
9 III.A.2.b.i. Uniform Hazardous Waste Manifest number; and

10  
11 III.A.2.b.ii. USDOT labels and markings as required.

12  
13 III.A.3. The Permittee must remove spilled or leaked waste within secondary containment  
14 pursuant to WAC 173-303-630(7)(a)(ii):

15  
16 III.A.3.a. Each spill or leak of dangerous waste to the secondary containment  
17 system that does not prompt implementation of the Contingency Plan  
18 (Permit Attachment GG) shall be entered into the operating record, per  
19 permit condition I.K, if not removed from the secondary containment  
20 system immediately.

21  
22 III.A.3.b. Each spill or leak of dangerous waste to the secondary containment  
23 system that prompts implementation of the Contingency Plan (Permit  
24 Attachment GG) shall be entered into the operating record pursuant to  
25 WAC 173-303-360(2)(k) and permit condition I.F.5.

26  
27 III.A.3.c. Notation to the operating record required by permit condition III.A.10.b  
28 shall include the following:

29  
30 III.A.3.c.i. Date and time of the occurrence;

31  
32 III.A.3.c.ii. Location of the discharge and identification of the equipment  
33 that caused discharge;

34  
35 III.A.3.c.iii. Description of materials spilled or leaked; and

36  
37 III.A.3.c.iv. Actions taken to correct the cause of the spill or leak.

38  
39 III.A.3.d. The Permittee shall maintain a concrete floor in the MWSF sealed with  
40 an impervious coating pursuant to WAC 173-303-630(7).

41  
42 III.A.3.e. The Permittee shall maintain the load/unload area outside the MWSF  
43 paved with concrete and/or asphalt to prevent hazards and contain spills.  
44  
45

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1 III.B. CLOSURE

2  
3 Building 1002 MWSF:

4  
5 III.B.1. The Permittee shall comply with the Closure Plan in Permit Attachment FF  
6 pursuant to requirements in WAC 173-303-610 and WAC 173-303-630(10).  
7 Compliance with Permit Attachment FF starts when the Permittee “expects to  
8 begin closure” pursuant to WAC 173-303-610(3)(c)(ii).  
9

10 III.B.2. At least 45 days before initiating closure, the Permittee must provide a  
11 Notification of Closure pursuant to requirements in WAC 173-303-610(3)(c).  
12

13 Building 944/982 Interim Status TSDF:

14  
15 III.B.3. Closure of Building 944/982 shall be accomplished in accordance with Ecology’s  
16 approved closure plan dated October 31, 2005.

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## **PART IV- FACILITY COMPLIANCE REQUIREMENTS**

### **IV.A. EMERGENCY PROCEDURES FOR NONCOMPLIANCE WITH PERMIT**

IV.A.1. The Permittee must implement emergency procedures specified in the Contingency Plan (Permit Attachment GG) in the event of an incidence of noncompliance with this Permit that could threaten human health or the environment.

IV.A.2. The Permittee must immediately notify Ecology and other appropriate authorities by telephone any circumstances under permit condition IV.A.1. This notification must meet the requirements in WAC 173-303-360(2)(d).

### **IV.B. NOTIFICATION PROCEDURES FOR SPILLS/RELEASES OF DANGEROUS WASTE AND/OR DANGEROUS CONSTITUENTS, EMERGENCY EVENTS, OR NONCOMPLIANCE WITH PERMIT**

IV.B.1. In the event any of the following spills and/or releases of a dangerous waste and/or dangerous constituent occurs, the Permittee must immediately notify Ecology's Northwest Regional Office Spill/Compliance Section (425-649-7000) initially, followed by notification to the lead inspector for the MWSF in the Nuclear Waste Program, Richland Office (509-372-7950). This telephone number may change; such a change is not a permit modification under Chapter 173-303 WAC. Notification is required for the following occurrences:

IV.B.1.a. Any spill and/or release that enters the environment (soil, air, surface water, ground water) causing the Permittee to implement the Contingency Plan (Permit Attachment GG); or

IV.B.1.b. Any spill or non-permitted discharge from the MWSF that requires notification pursuant to WAC 173-303-145(2)(a) or (b).

IV.B.2. The Permittee must record in the MWSF operating record the time, date, and details of any incident that requires implementation of the Contingency Plan (Permit Attachment GG). Within 15 days after the incident, the Permittee must submit a written report on the incident to Ecology. Such a report must at a minimum include all items specified in WAC 173-303-360(2)(k).

IV.B.3. The Permittee must immediately report any noncompliance which may endanger health or the environment. Ecology will require a written submission within five (5) days of any incident. Ecology may waive the written submission requirement in favor of a written report containing a description of the noncompliance pursuant to the requirements of WAC 173-303-810(14)(f).

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1           IV.B.4. The Permittee must report to Ecology all incidents of noncompliance with this  
2           Permit within fifteen (15) days of such noncompliance. These reports must meet  
3           the requirements in WAC 173-303-810(14)(g).  
4

5   IV.C. SPECIAL REQUIREMENTS FOR SAMPLING AND ANALYSIS  
6

7           The Permittee must allow independent sampling and sample splitting when requested by  
8           Ecology. At the Permittee's request, Ecology will inform the Permittee of all analyses to  
9           be performed on split samples.  
10

11   IV.D. LAND DISPOSAL RESTRICTION REQUIREMENTS  
12

13           The Permittee shall comply with applicable requirements of WAC 173-303-140, which  
14           incorporates by reference 40CFR Part 268.

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## **PART V- CORRECTIVE ACTION**

### **V.A. DEFINITIONS**

Unless otherwise specified, the definitions set forth in Chapter 70.105 & Chapter 70.105D RCW, Chapter 173-303 WAC, and Chapter 173-340 WAC, undertaken in whole or in part to fulfill the requirements of WAC 173-303-646, shall control the meanings of the terms used in this section of this Permit. Additional or modified definitions are as follows:

V.A.1. Corrective Action means any activities including investigations, studies, characterizations, and corrective measures, including actions taken pursuant to Chapter 70.105D RCW and Chapter 173-340 WAC, undertaken in whole or in part to fulfill the requirements of WAC 173-303-646.

V.A.2. Facility, for the purposes of RCRA corrective action, the "Facility" shall be the Bremerton Naval Complex, as depicted in Figures 1 & 2 of Permit Attachment II according to permit condition II.H.

### **V.B. REQUIREMENTS**

V.B.1. In accordance with WAC 173-303-646 and WAC 173-303-815(2)(b)(ii), the Permittee must conduct corrective action, as necessary to protect human health and the environment, for releases of dangerous waste and dangerous constituents from solid waste management units and areas of concern at the Facility, including releases that have migrated beyond the Facility boundary. The Permittee may be required to implement measures within the Facility to address releases which have migrated beyond the Facility's boundary.

V.B.2. Compliance with Chapter 173-340 WAC  
By June 30, 2007, or such other time that may be approved in writing by Ecology's Toxic Cleanup Program, the Permittee shall submit a permit modification request to incorporate by reference into this Permit a Cleanup Action Plan for Operable Unit C in accordance with WAC 173-303-64620(3).  
In accordance with WAC 173-303-646, the Permittee must conduct corrective action "as necessary to protect human health and the environment". To ensure that corrective action will be conducted as necessary to protect human health and the environment, except as provided in Permit Condition V.B.3, the Permittee must conduct corrective action in a manner that complies with the following provisions of Chapter 173-340 WAC:

V.B.2.a. As necessary to select a cleanup action in accordance with WAC 173-340-360 and WAC 173-340-350 State Remedial Investigation and Feasibility Study;

Expiration Date: July 28, 2016

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V.B.2.b. WAC 173-340-360 Selection of Cleanup Actions;

V.B.2.c. WAC 173-340-400 Cleanup Actions;

V.B.2.d. WAC 173-340-410 Compliance Monitoring Requirements;

V.B.2.e. WAC 173-340-420 Periodic Site Reviews;

V.B.2.f. WAC 173-340-440 Institutional Controls; and

V.B.2.g. WAC 173-340-700 through -760 Cleanup Standards.

V.B.3. Acceptance of Work Under Other Authorities or Programs and Integration with the Federal Facilities Compliance Act (FFCA).

Work under other cleanup authorities or programs, including work under the FFCA, may be used to satisfy corrective action requirements, provided it protects human health and the environment and conforms to permit condition V.B.2. Subject to permit condition V.B.4, the Permittee shall be considered in compliance with the requirements of WAC 173-303-64620 through compliance with the following Records of Decision (RODs), including any modifications which may result from periodic five year reviews, issued pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA):

Final Record of Decision, BNC, OU A, signed January 24, 1997

Final Record of Decision, BNC, OU B Marine, signed June 13, 2000

Final Record of Decision, BNC, OU B Terrestrial, signed March 8, 2004

Final Record of Decision, BNC, OU NSC, signed December 13, 1996

Final Record of Decision, BNC, OU D, signed May 11, 2005

V.B.4. Upon completion of work required by the Records of Decisions in permit condition V.B.3, Ecology will determine whether the requirements of WAC 173-303-64620(1) and (2) have been satisfied, including but not limited to the requirements of WAC 173-303-64620(4), or if additional corrective action is required pursuant to WAC 173-303-64620(1) and (2).

#### V.C. NEWLY IDENTIFIED SOLID WASTE MANAGEMENT UNITS AND RELEASE NOTIFICATION

V.C.1. The Permittee shall notify Ecology, in writing, of any newly-identified solid waste management unit(s) (SWMU[s]) at the BNC at which solid wastes, including spills, have been routinely and systematically released. The notification shall occur no later than fifteen (15) days after discovery. This notification shall include the information specified in WAC 173-303-806(4)(a)(xxiii).

Expiration Date: July 28, 2016

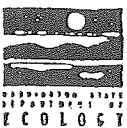
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1  
2 V.C.2. The Permittee shall notify Ecology, in writing, of any newly-discovered releases  
3 of dangerous wastes and/or dangerous constituents, including releases from any  
4 SWMUs at the Facility, immediately upon discovery or as soon as practicable.  
5 This notification shall include the information specified in WAC 173-303-  
6 806(4)(a)(xxiv).  
7

8 V.D. TRANSFERENCE OF PROPERTY  
9

10 V.D.1. Prior to any voluntary or involuntary conveyance or relinquishment of title,  
11 easement, leasehold, or other interest in any portion of the Facility, the Permittee  
12 shall provide for continued implementation of all corrective action requirements  
13 of this section of this Permit and implementation of any corrective action found to  
14 be necessary as a result of this section of this Permit.  
15

16 V.D.2. Prior to transfer of any legal or equitable interest the Permittee may have in the  
17 Facility or any portions thereof, the Permittee shall serve a copy of this section of  
18 this Permit upon any prospective purchaser, lessee, transferee, assignee, or other  
19 successor in such interest. At least 30 days prior to the finalization of any  
20 transfer, the Permittee shall notify Ecology of the contemplated transfer and  
21 provide Ecology with a plan for continued implementation of this section of this  
22 Permit. The Permittee shall also submit a request for modification of this Permit  
23 per WAC 173-303-830(3) and (4).  
24

<b>FORM 1</b>	 <b>Washington State DANGEROUS WASTE PERMIT GENERAL INFORMATION</b> <small>(Read "Form 1 Instructions" before starting)</small>	I. EPA/State I.D. No. <div style="border: 1px solid black; padding: 2px; display: inline-block;"> WA 2170023418 </div>
---------------	--	---

<b>II. NAME OF FACILITY</b> (at Bremerton Naval Complex)			
MIXED WASTE STORAGE FACILITY BUILDING 1002			
<b>III. FACILITY CONTACT</b>			
A. Name and Title (last, first, & title)			B. Phone (area code & no.)
KOHLER JOE MGR MIXED WASTE PREM			360 476 2185
<b>IV. FACILITY MAILING ADDRESS</b>			
A. Street or P.O. Box			
1400 Farragut Ave, Code 105.7 Bldg 850A-3rd Flr			
B. City or Town		C. State	D. Zip Code
Bremerton		WA	98314-5001
<b>V. FACILITY LOCATION</b>			
A. Street, Route No., or Other Specific Identifier			
Section 22,23,24-T24N-R1F			
B. County Name			
Kitsap			
C. City or Town		D. State	E. Zip Code
Bremerton		WA	98314-5001
<b>VI. SIC CODES (4-digit, in order of priority)</b>			
A. First (specify) National Security		B. Second (specify) Ship Repair, Recycling, and Overhaul	
9711		3731	
C. Third (specify) Homeporting of Naval Vessels/Inactive Fleet		D. Fourth (specify) FISC General Warehousing	
4493		4225	
<b>VII. OPERATOR INFORMATION</b>			B. Is the name listed in item VII-A also the owner?
A. Name			<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO
US Department of the Navy			
C. Status of Operator (Enter the appropriate letter into the answer box; if "Other" specify)			D. Phone (area code & no.)
F = Federal    M = Public (other than federal or state)    S = State    P = Private    O = Other (specify)    F			360 476 2185
E. Street or P.O. Box			
1400 Farragut Ave, Code 105.7 Bldg 850A-3rd Flr			
F. City or Town		G. State	H. Zip Code
Bremerton		WA	98314
<b>VIII. INDIAN LAND</b>			
Is the facility located on Indian lands? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO			

Complete Back Page

IX. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property boundaries. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers, and other surface water bodies in the map area. See instructions for precise requirements.

X. NATURE OF BUSINESS (provide a brief description)

The Bremerton Naval Complex is composed of 3 major Naval Commands: Puget Sound Naval Shipyard (PSNS), Naval Station Bremerton (NSB), and the Fleet and Industrial Supply Center (FISC). Overall environmental responsibility for the Bremerton Naval Complex resides with Puget Sound Naval Shipyard.

Puget Sound Naval Shipyard's main function is to perform work, on all types of naval ships, such as overhauls, repairs, conversions, refurbishment, refueling, recycling, manufacturing, research, development, and testing.

Naval Station Bremerton's main function is to support home ported naval ships, which includes housing, recreational and retail facilities for naval personnel. In addition to supporting home ported ships, NSB also hosts the Naval Inactive Ships Maintenance Facility.

Fleet Industrial Supply Center's main function is to purchase, store and distribute supplies to the fleet and naval bases.

The mixed waste storage facility, Building 1002, is located within the BNC.

Full title is Puget Sound Naval Shipyard and Intermediate Maintenance Facility.

XI. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

A. Name & Official Title (Type or print)  
T. B. BALTZ  
Director Radiological Control

B. Signature



C. Date Signed

6/29/2004

<b>FORM 3</b>	<b>DANGEROUS WASTE PERMIT APPLICATION</b>	I. EPA/State I.D. No. <div style="border: 1px solid black; padding: 2px; display: inline-block;">           W A 2 1 7 0 0 2 3 4 1 8         </div>
<b>FOR OFFICIAL USE ONLY</b>		
Application Approved	Date Received, (month/ day / year)	Comments
<b>II. FIRST OR REVISED APPLICATION</b>		
Place an "X" in the appropriate box in A or B below (mark one box only) to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA/STATE I.D. Number, or if this is a revised application, enter your facility's EPA/STATE I.D. Number in Section I below.		
<b>A. First Application (place an "X" below and provide the appropriate date)</b>  <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> 1. Existing Facility (See instructions for definition of "existing" facility. Complete item below.)   <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">MO</div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">DAY</div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">YR</div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div> </div> <p style="font-size: small; margin-top: 5px;">For existing facilities, provide the date (mo/day/yr) operation began or the date construction commenced. (Use the boxes to the left.)</p> </div> <div style="width: 45%;"> <input checked="" type="checkbox"/> 2. New Facility (Complete item below.)   <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">MO</div> <div style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">09</div> </div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">DAY</div> <div style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">+</div> </div> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 2px;">YR</div> <div style="border: 1px solid black; width: 20px; height: 20px; text-align: center;">96</div> </div> </div> <p style="font-size: small; margin-top: 5px;">For new facilities, provide the date (mo/day/yr) operation began or is expected to begin.</p> </div> </div>		
<b>B. Revised Application (Place an "X" below and complete Section I above.)</b> <b>Revised Application for Final Status</b>  <div style="display: flex; justify-content: space-between;"> <input type="checkbox"/> 1. Facility has an interim Status Permit         <input type="checkbox"/> 2. Facility has a Final Permit       </div>		
<b>III. PROCESSES - CODES AND DESIGN CAPACITIES</b>		
<b>A. Process Code</b> - Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code(s) in the space provided. If a process will be used that is not included in the list of codes below, then describe the process (including its design capacity) in the space provided on the (Section III-C).		
<b>B. Process Design Capacity</b> - For each code entered in column A, enter the capacity of the process. 1. Amount - Enter the amount. 2. Unit of Measure - For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.		
PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
<b>STORAGE:</b>		
Container (barrel, drum, etc.)	S01	Gallons or liters
Tank	S02	Gallons or liters
Waste Pile	S03	Cubic yards or cubic meters
Surface Impoundment	S04	Gallons or liters
<b>DISPOSAL:</b>		
Injection Well	D80	Gallons or liters
Landfill	D81	Acre-feet (the volume that would cover one acre to a depth of one foot) or hectare-meter
Land Application	D82	Acres or hectares
Ocean Disposal	D83	Gallons per day or liters per day
Surface Impoundment	D84	Gallons or liters
<b>TREATMENT:</b>		
Tank	T01	Gallons per day or liters per day
Surface Impoundment	T02	Gallons per day or liters per day
Incinerator	T03	Tons per hour or metric tons per hour; gallons per hour or liters per hour
Other (Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Section III-C)	T04	Gallons per day or liters per day
Units of Measure      Unit of Measure Code      Units of Measure      Unit of Measure Code      Units of Measure      Unit of Measure Code Gallons . . . . . G      Liters Per Day . . . . . V      Acre-Feet . . . . . A Liters . . . . . L      Tons Per Hour . . . . . D      Hectare-Meter . . . . . F Cubic Yards . . . . . Y      Metric Tons Per Hour . . . . . W      Acres . . . . . B Cubic Meters . . . . . C      Gallons Per Day . . . . . E      Hectares . . . . . Q Gallons Per Day . . . . . U      Liters Per Hour . . . . . H		

### III. PROCESSES — CODES AND DESIGN CAPACITIES (continued)

Example for Completing Section III (shown in line numbers X-1 and X-2 below): A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

Line No.	A. Process Code (from list above)			B. Process Design Capacity			For Official Use Only			
				1. Amount (specify)	2. Unit of Measure (enter code)					
X-1	S	0	2	600		G				
X-2	T	0	3	20		E				
1	S	0	1	33,000		G				
2										
3										
4										
5										
6										
7										
8										
9										
10										

C. Space for additional process codes or for describing other process (code "T04"). For each process entered here include design capacity.

### IV. DESCRIPTION OF DANGEROUS WASTES

A. Dangerous Waste Number — Enter the digit number from Chapter 173-303 WAC for each listed dangerous waste you will handle. If you handle dangerous wastes which are not listed in Chapter 173-303 WAC, enter the four-digit number(s) that describes the characteristics and/or the toxic contaminants of those dangerous wastes.

B. Estimated Annual Quantity — For each listed waste entered in column A, estimate the quantity of that waste that will be handled on an annual basis. For each characteristic or toxic contaminant entered in column A, estimate the total annual quantity of all the non-listed waste(s) that will be handled which possess that characteristic or contaminant.

Photocopy this page before completing if you have more than 26 wastes to list.

I.D. Number (enter from page 1)											
W	A	2	1	7	0	0	2	3	4	1	8

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

Line No.	A. Dangerous Waste No. (enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Processes				
				1. Process Codes (enter)				2. Process Description (if a code is not entered in D(1))
1	D 0 0 6	1 2 9 4	P	S 0 1				
2	D 0 0 7		P	S 0 1				Included with above
3	D 0 0 8		P	S 0 1				Included with above
4	W T 0 2		P	S 0 1				Included with above
5	D 0 0 5	7 1 5	P	S 0 1				
6	D 0 0 6		P	S 0 1				Included with above
7	D 0 0 7		P	S 0 1				Included with above
8	D 0 0 8		P	S 0 1				Included with above
9	W T 0 2		P	S 0 1				Included with above
10	D 0 0 5	3 4 7	P	S 0 1				
11	D 0 0 6		P	S 0 1				Included with above
12	D 0 0 7		P	S 0 1				Included with above
13	D 0 0 8		P	S 0 1				Included with above
14	D 0 1 1		P	S 0 1				Included with above
15	W P 0 1		P	S 0 1				Included with above
16	D 0 0 5	1 6 7 0	P	S 0 1				
17	D 0 0 6		P	S 0 1				Included with above
18	D 0 0 7		P	S 0 1				Included with above
19	D 0 0 8		P	S 0 1				Included with above
20	F 0 0 2		P	S 0 1				Included with above
21	F 0 0 3		P	S 0 1				Included with above
22	F 0 0 5		P	S 0 1				Included with above
23	W P 0 1		P	S 0 1				Included with above
24	W T 0 2		P	S 0 1				Included with above
25	D 0 0 8	1 6 7 1 3	P	S 0 1				
26	D 0 0 5	1 3 6	P	S 0 1				

Photocopy this page before completing if you have more than 26 wastes to list.

I.D. Number (enter from page 1)											
W	A	2	1	7	0	0	2	3	4	1	8

IV. DESCRIPTION OF DANGEROUS WASTES (continued)

Line No.	A. Dangerous Waste No. (enter code)	B. Estimated Annual Quantity of Waste	C. Unit of Measure (enter code)	D. Processes			
				1. Process Codes (enter)			2. Process Description (if a code is not entered in D(1))
1	D 0 0 6		P	S 0 1			Included with above
2	D 0 0 7		P	S 0 1			Included with above
3	D 0 0 8		P	S 0 1			Included with above
4	D 0 1 1		P	S 0 1			Included with above
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							

#### IV. DESCRIPTION OF DANGEROUS WASTES (continued)

E. Use this space to list additional process codes from Section D(1) on page 3.

#### V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility (see instructions for more detail).

#### VI. PHOTOGRAPHS

All existing facilities must include photographs (aerial or ground level) that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas (see instructions for more detail).

#### VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE (degrees, minutes, & seconds)

LONGITUDE (degrees, minutes, & seconds)

4 7 3 3 3 0

1 2 2 3 8 3 5

#### VIII. FACILITY OWNER

☒ A. If the facility owner is also the facility operator as listed in Section VII on Form 1, "General Information," place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VII on Form 1, complete the following:

1. Name of Facility's Legal Owner

2. Phone Number (area code & no.)

3. Street or P.O. Box

4. City or Town

5. St

6. Zip Code

#### IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Name (print or type)  
T. B. BALTZ

Signature

Date Signed

6/29/2009

#### X. OPERATOR CERTIFICATION

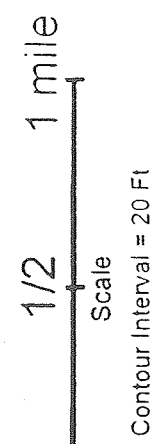
I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

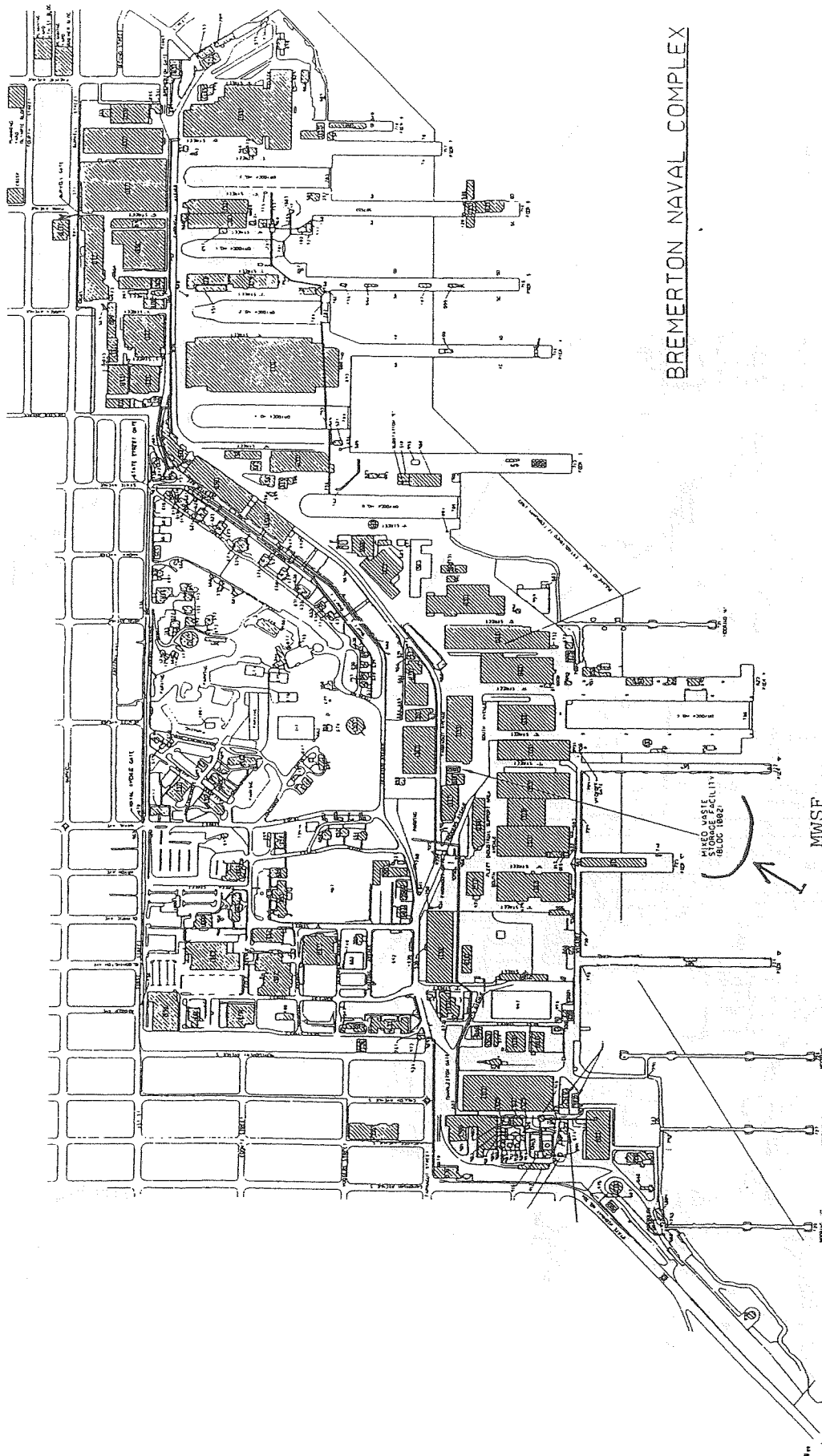
Name (print or type)

Signature

Date Signed





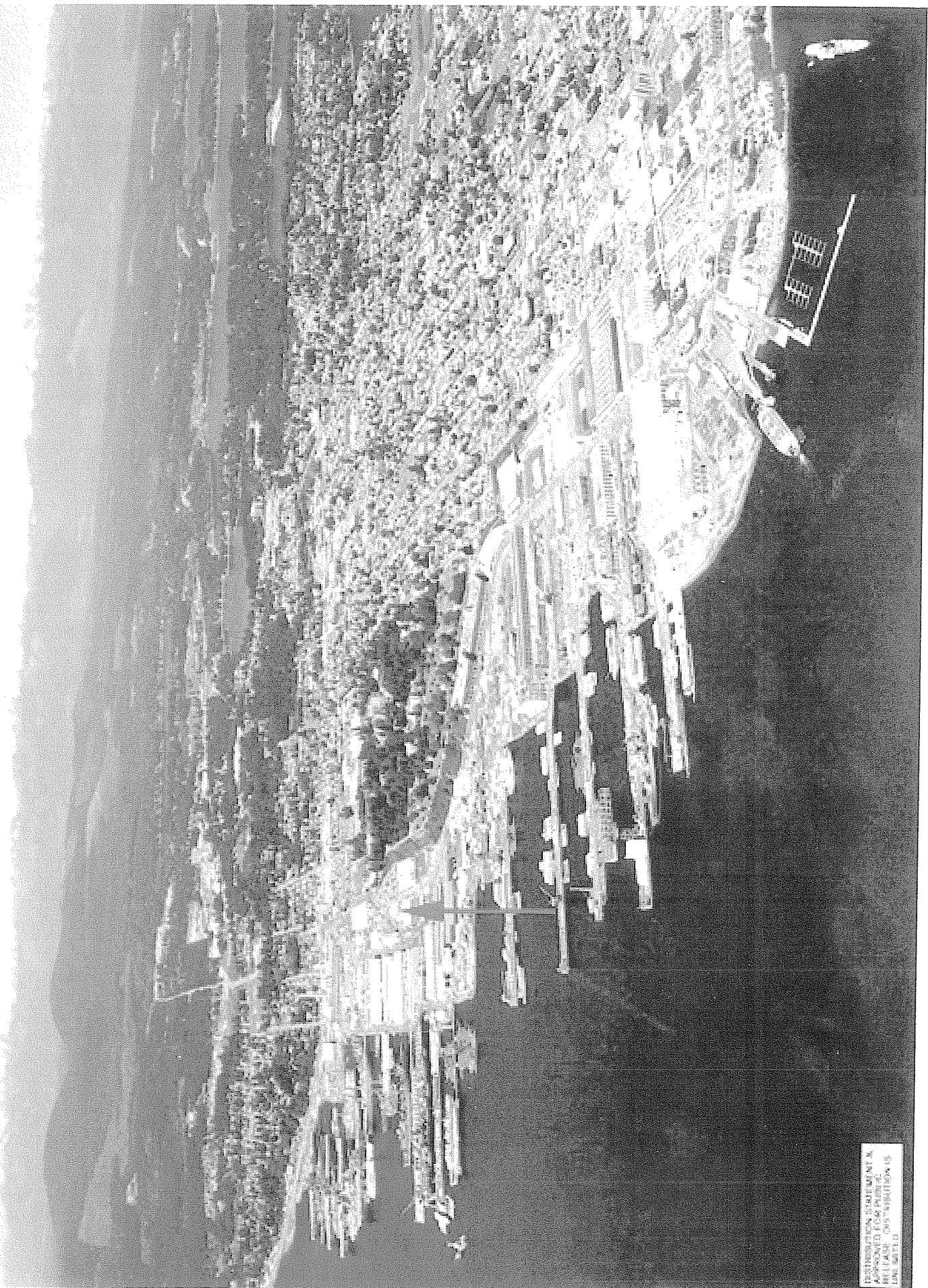


**Photo A-1**

Aerial photograph

MWSF at red arrow





PHOTOGRAPH BY STAFF PHOTOGRAPHY  
UNITED STATES AIR FORCE  
1960 30677.13



**Photo A-2**

**Photograph of MWSF (Building 1002)**





DISTRIBUTION STATEMENT A  
APPROVED FOR PUBLIC  
RELEASE; DISTRIBUTION IS  
UNLIMITED.

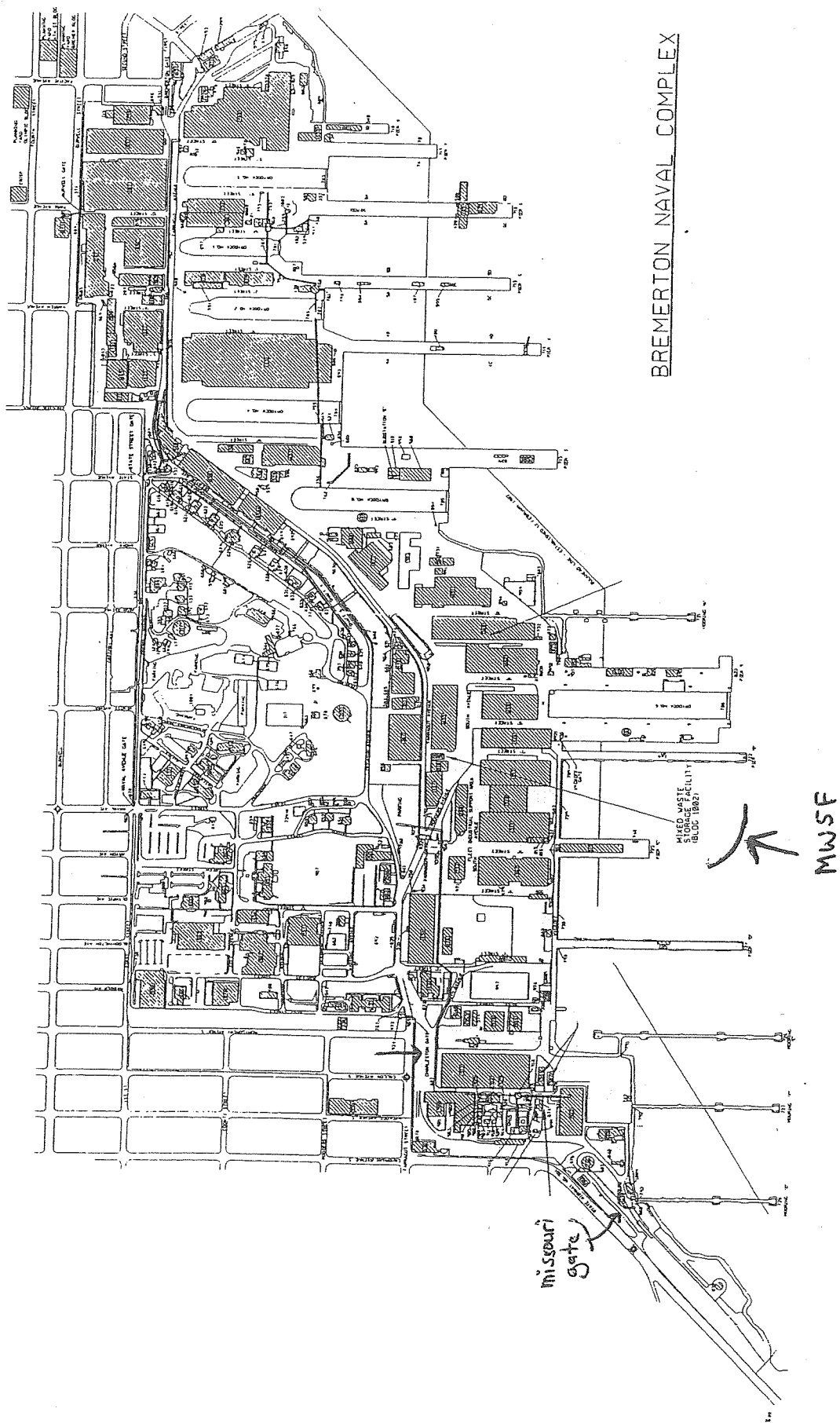


Figure B-1: Bremerton Naval Complex:

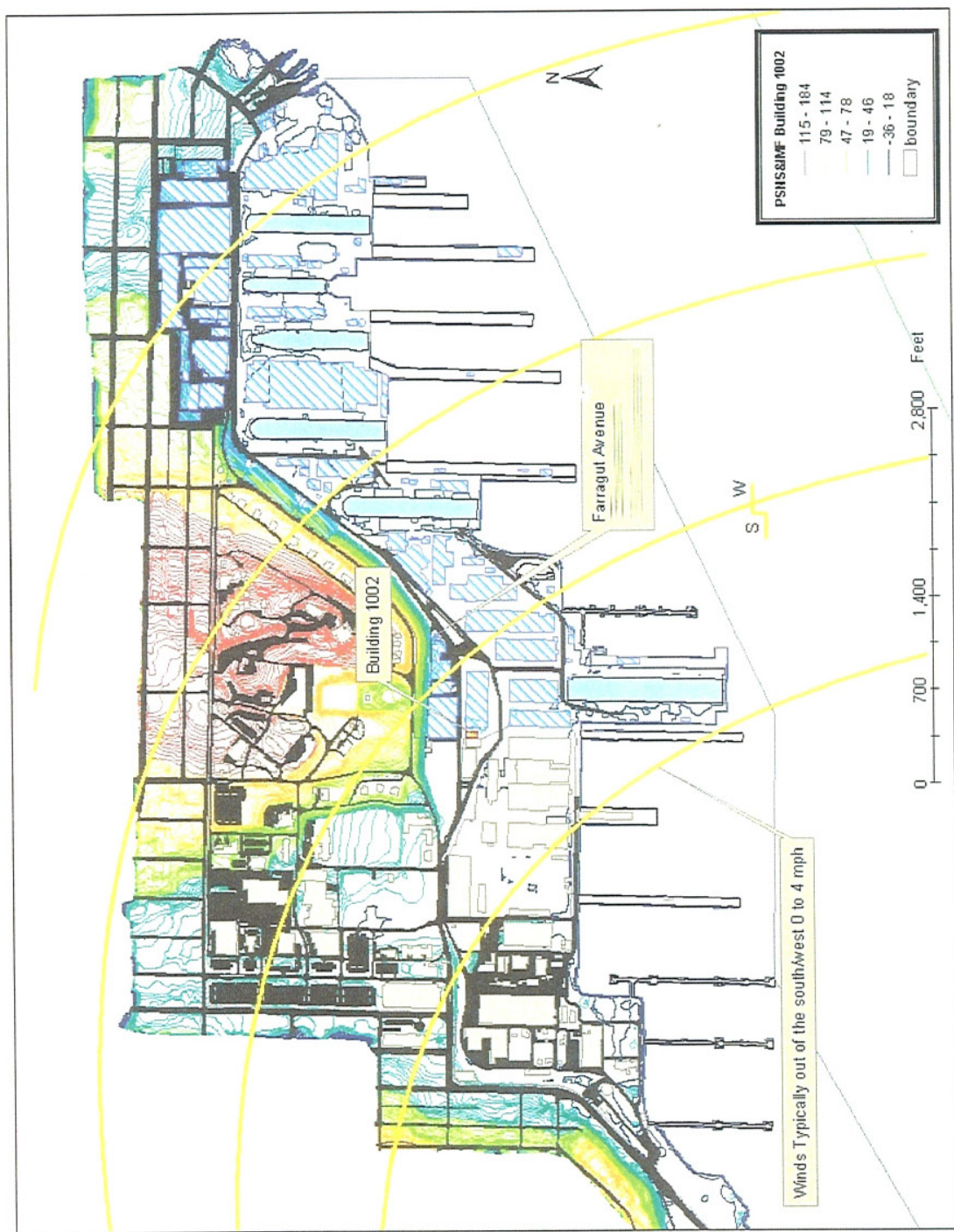


Figure B-3: Bremerton Naval Complex topography (with PSNS CIA shaded in Blue)

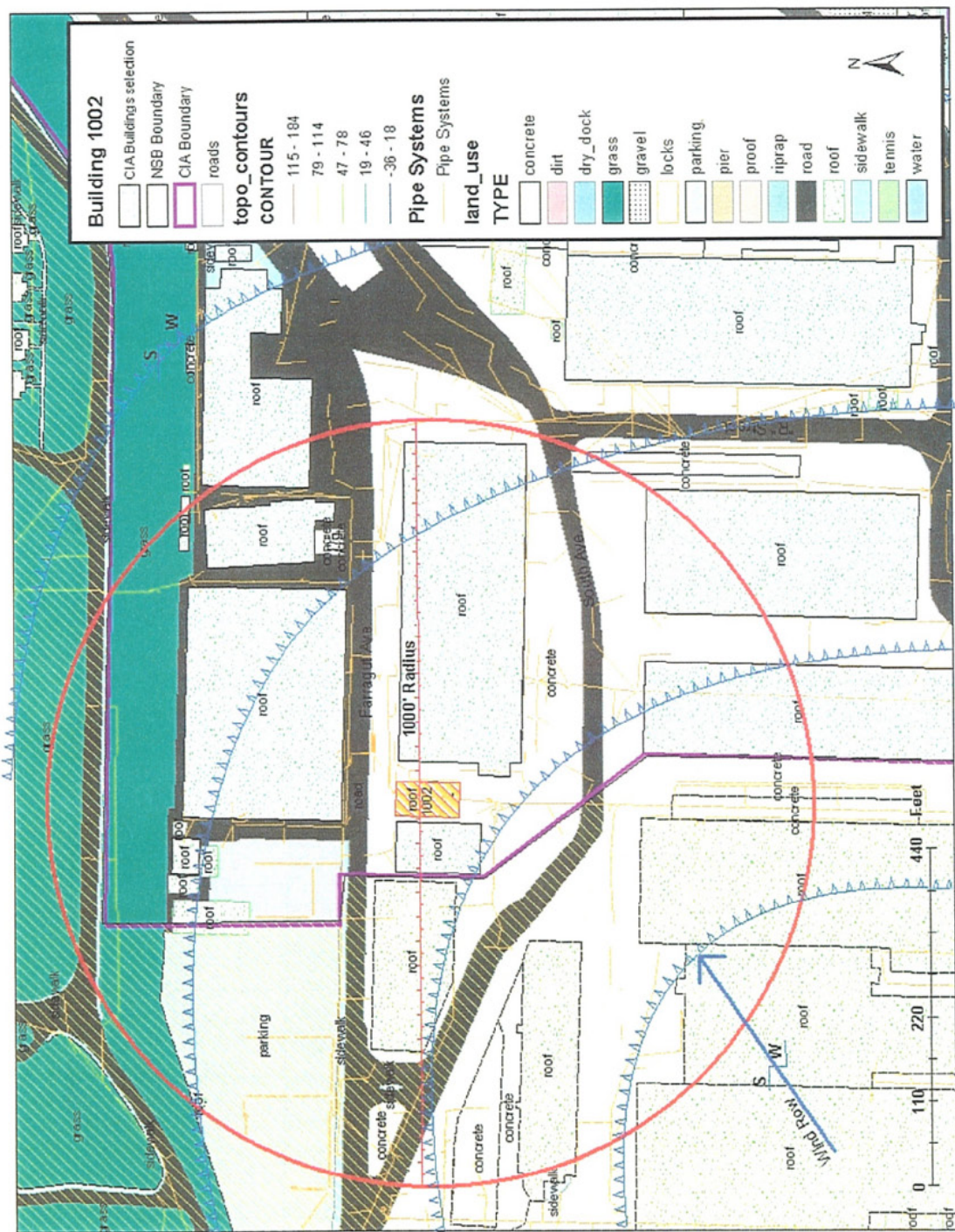
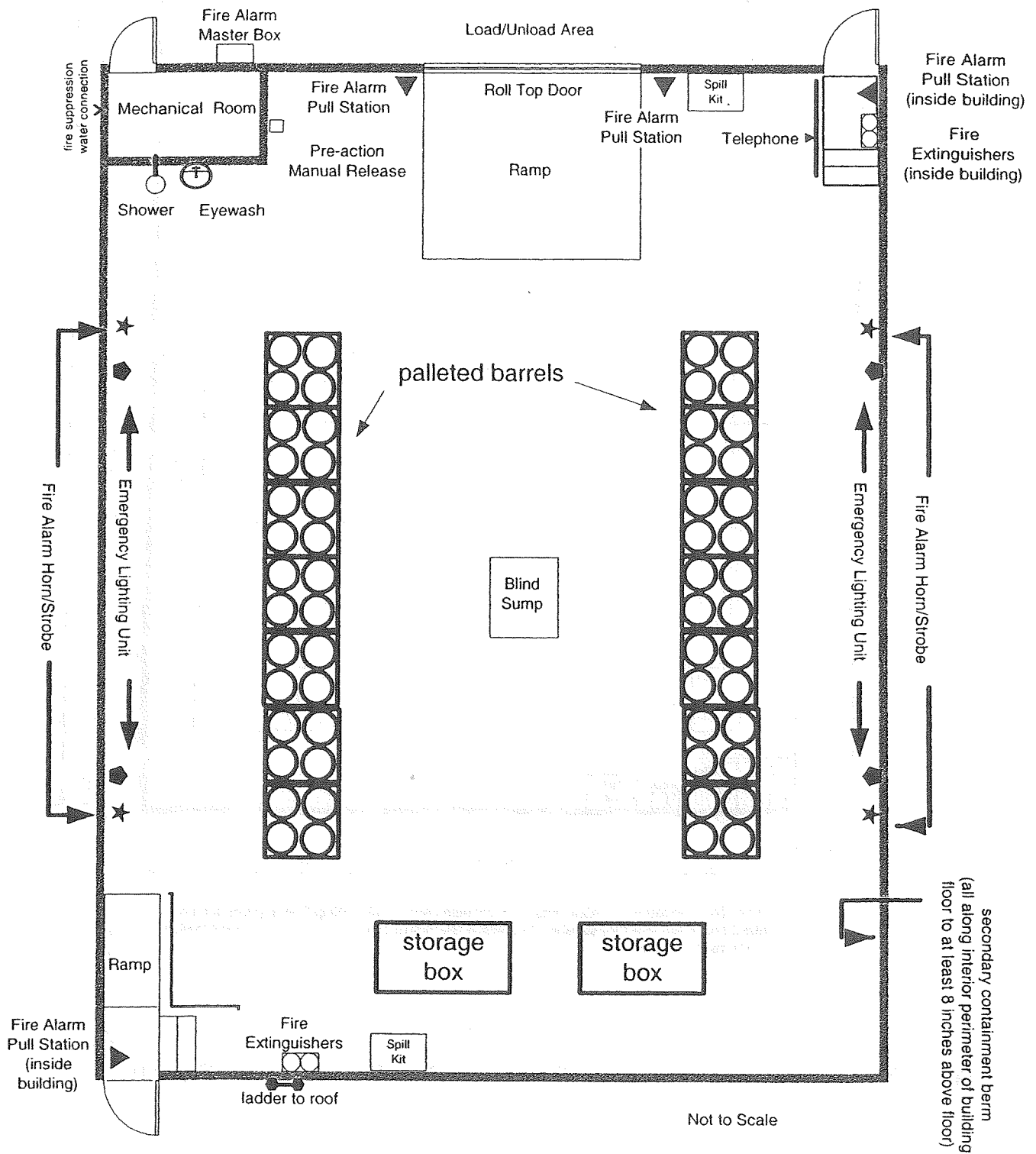
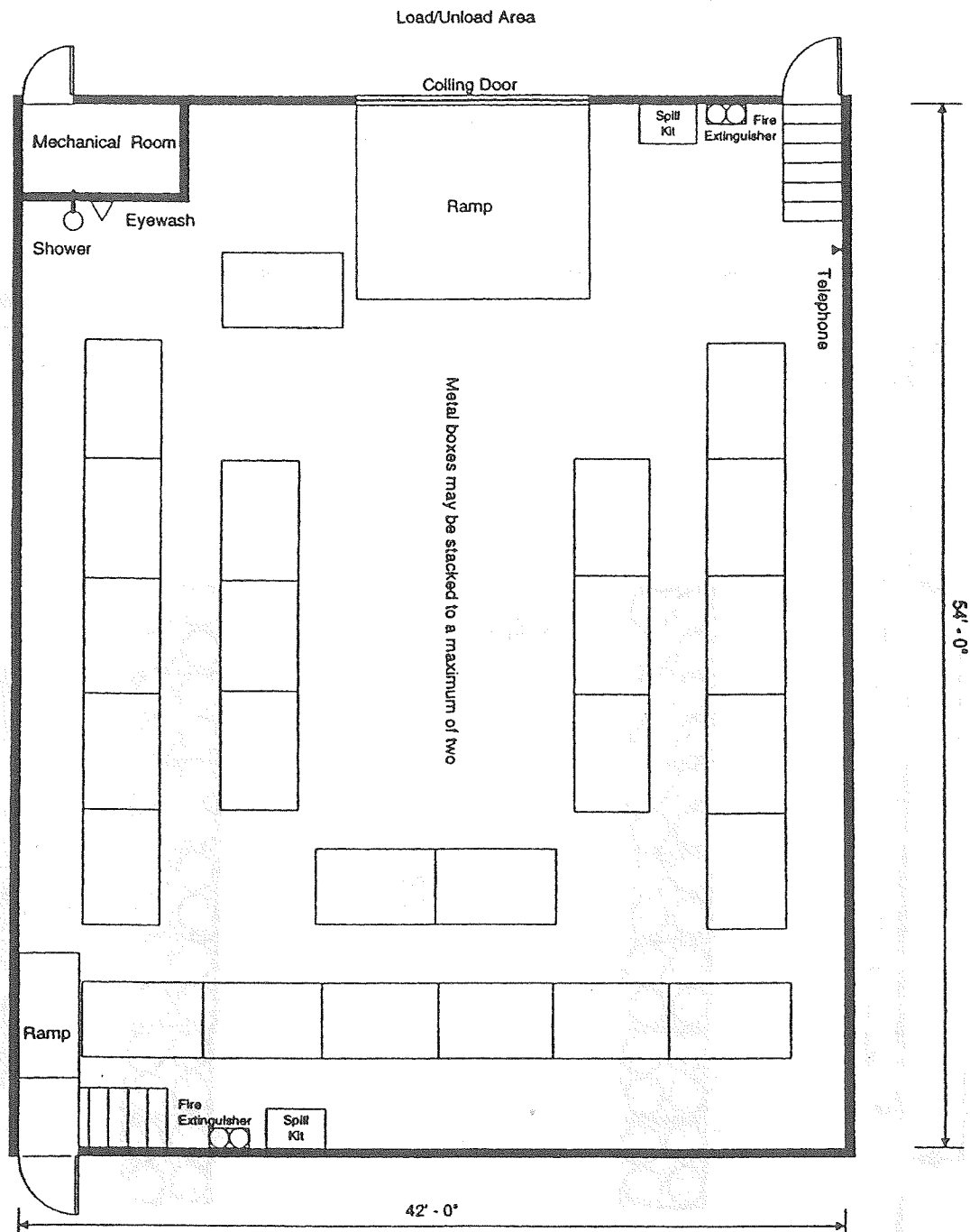


Figure B-4: Detail of Area within 1000 feet of MWSF

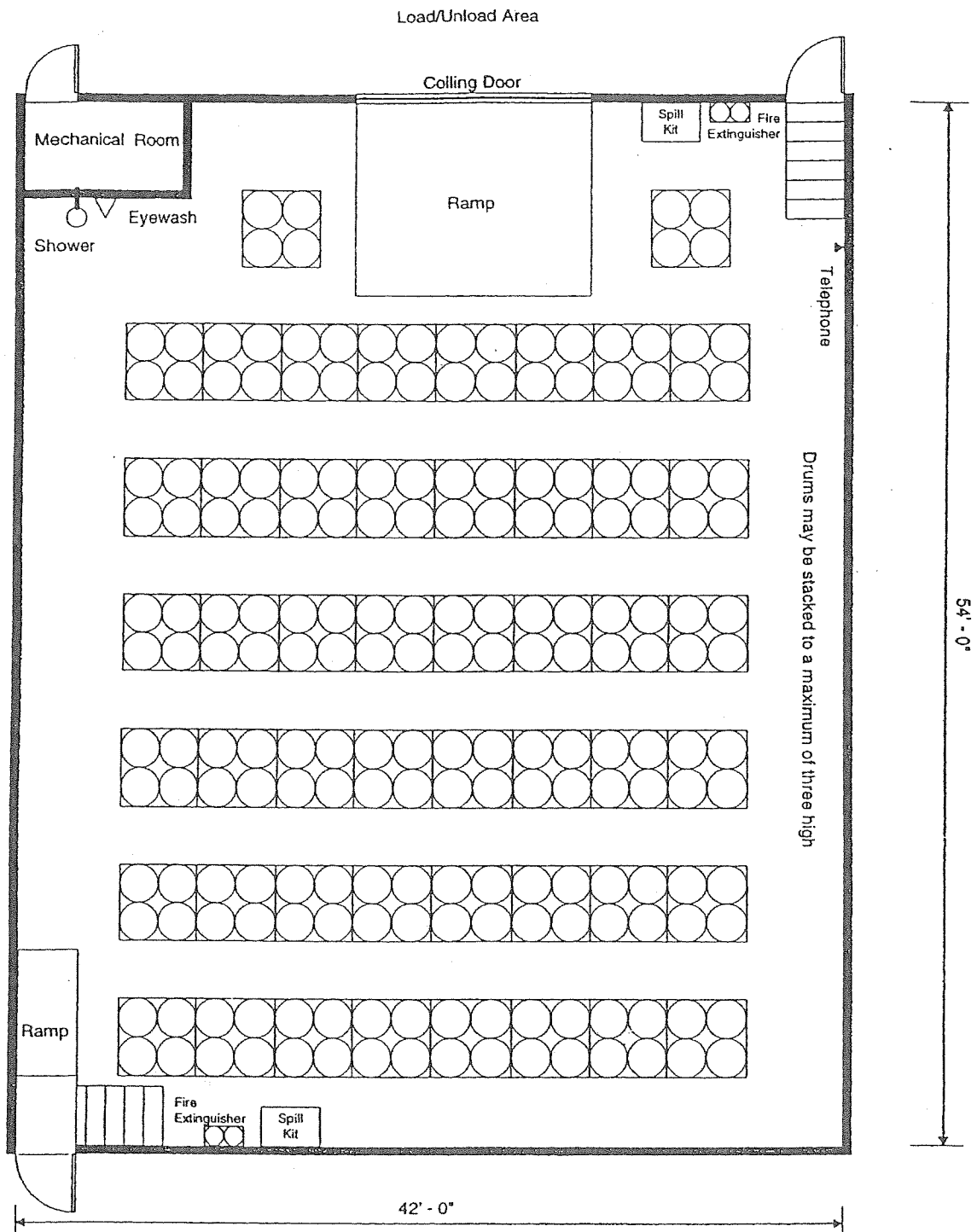
**Figure D-1**  
**Typical Arrangement inside**  
**Mixed Waste Storage Facility**





Note: This configuration represents the maximum capacity (33,000 gal) arrangement if only metal boxes are used for storage. In practice, the actual configuration will be a combination of drums and boxes.

Figure D-2: Conceptual Arrangement of Boxes inside MWSF for Maximum Capacity



Note: This configuration represents the maximum capacity (33,000 gal) arrangement if only drums are used for storage. In practice, the actual configuration will be a combination of drums and boxes.

Figure D-3: Conceptual Arrangement of Barrels/Drums inside MWSF for Maximum Capacity

**Puget Sound Naval Shipyard**

**Mixed Waste Analysis Plan**

**Attachment CC**

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## LIST OF ACRONYMS

ASTM	American Society for Testing and Materials
DOT	Department of Transportation
DW	Dangerous Waste
Ecology	Washington Department of Ecology
EHW	Extremely Hazardous Waste
EPA	Environmental Protection Agency
HOC	Halogenated Organic Compound
DWMU	Dangerous Waste Management Unit
IRR	Inactivation, Recycling, Reactor Compartment Disposal
LDR	Land Disposal Restriction
LLRW	Low Level Radioactive Waste
MEK	Methyl Ethyl Ketone
MSDS	Material Safety Data Sheet
MWAP	Mixed Waste Analysis Plan
MWMP	Mixed Waste Management Plan
MWPP	Mixed Waste Profile Portfolio
MWPR	Mixed Waste Profile Record
MWSF	Mixed Waste Storage Facility
NNPP	Naval Nuclear Propulsion Program
PAH	Polycyclic Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
PPE	Personal Protective Equipment
PSNS	Puget Sound Naval Shipyard
QP	Laboratory Quality Plan
RAMT	Radioactive Material Tag
RWIS	Radioactive Waste Information Sheet
QA/QC	Quality Assurance / Quality Control
RCRA	Resource Conservation and Recovery Act
SAR	Sample Analysis Request
TBG	Treatment by Generator
TCLP	Toxicity Characteristic Leaching Procedure
TSCA	Toxic Substances Control Act
TWD	Technical Work Document
VOC	Volatile Organic Compound
WAC	Washington Administrative Code

# Mixed Waste Analysis Plan

## 1. General

This instruction provides guidance for the analysis of mixed waste at Puget Sound Naval Shipyard (PSNS). PSNS generates small quantities of waste that may have both radioactive constituents and constituents regulated under the Washington State Dangerous Waste Regulations, reference (1). This waste may also be regulated under the Federal Resource Conservation and Recovery Act, reference (2), and/or the Federal Toxic Substances Control Act (for PCBs), reference (3). A written waste analysis plan is used to comply with the requirements of references (1) (section 300) and (2) (Part 270.14). This Mixed Waste Analysis Plan (MWAP) applies only to mixed waste generated by the Naval Nuclear Propulsion Program (NNPP).

### 1.1 Objectives

The intent of this plan is to specify the methods and parameters used to analyze the mixed waste received or generated by PSNS. The objectives of this MWAP are:

- Identify the constituents and characteristics of a mixed waste that cause the waste to be regulated under reference (1), so the waste can be properly treated, stored, transported, and/or disposed.
- Perform reanalysis on mixed waste streams to verify their characterization.
- Ensure mixed waste is compatible with its storage containers.
- Ensure incompatible wastes are not mixed together.
- Identify sampling and testing procedures for mixed waste analysis.
- Specify the responsibilities of the various organizations performing or assisting in mixed waste analysis.
- Ensure all requirements of the Resource Conservation and Recovery Act (RCRA) and the Washington Department of Ecology (Ecology) regulations for mixed waste analysis are accomplished and documented.
- Identify any applicable Land Disposal Restrictions (LDR) for the waste.
- Ensure all requirements of the Toxic Substances Control Act (TSCA) are accomplished and documented.

### 1.2 References

- (1) Washington Dangerous Waste Regulations, Washington Administrative Code (WAC) 173-303
- (2) RCRA Hazardous Waste Regulations, Code of Federal Regulations, Title 40, Parts 260 through 279
- (3) Toxic Substances Control Act, Code of Federal Regulations, Title 40, Part 761
- (4) NAVSHIPYDPUGETINST P5090.37, Puget Sound Naval Shipyard Code 105.2, Mixed Waste Management Plan. Applicable Nuclear Power Manual chapters incorporating the requirements of P5090.37 may be used in place of P5090.37 when authorized.

- (5) PSNS Code 134 Laboratory Division Quality Control Manual, Chapter 8.
- (6) Department of Transportation (DOT) Regulations, Code of Federal Regulations, Title 49, Parts 171-177
- (7) EPA-600/2-80-076, 1980, A Method of Determining the Compatibility of Hazardous Waste
- (8) EPA publication SW-846, latest edition, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods
- (9) NAVSHIPYDPUGETINST 4730.54, Puget Sound Naval Shipyard Code 134, Submitting Samples to the Laboratory Division for Analysis or Test
- (10) NAVSHIPYDPUGETINST 5090.26A CH-3, Puget Sound Naval Shipyard Code 106, Waste Analysis Plan, latest edition
- (11) Treatment by Generator Waste Analysis Plan, Puget Sound Naval Shipyard Code 105.2, latest edition

### 1.3 Definitions

Batch: Any waste generated less frequently than once a month.<sup>1</sup>

Characterization: The identification and quantification of constituents and properties that cause a waste to be regulated under reference (1) based on data gained from sampling and/or process knowledge.

Common Wastes: Wastes in a particular waste stream for which the waste stream characterization is consistent throughout. These wastes are re-analyzed periodically as a stream.

Container: Any portable device in which a substance or waste is stored, transported, treated, disposed, or otherwise handled.<sup>1</sup>

Dangerous Waste: Solid waste designated by reference (1). Reference (1) may place an additional classification of 'extremely hazardous' on some designated waste. All reference (1) designated waste would be a mixed waste if radioactive constituents are present.<sup>1</sup>

Designation: The process of determining whether a waste is regulated under the dangerous waste lists, characteristics, or criteria given in reference (1).<sup>1</sup>

Disposal: Discharging, discarding, or abandoning of dangerous wastes or the treatment, decontamination, or recycling of such wastes once they have been discarded or abandoned.<sup>1</sup>

Extremely Hazardous waste: A dangerous waste (i.e., solid waste designated by reference (1)), that is further designated by reference (1) as 'extremely hazardous' due to its constituents. This waste would be a mixed waste if radioactive constituents are present.<sup>1</sup>

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<sup>1</sup> The term 'hazardous waste' refers to waste designated by reference (2) and should not be confused with 'extremely hazardous waste' from reference (1). Dangerous and Extremely Hazardous waste from reference (1) may or may not be regulated as hazardous waste under reference (2). In some cases, waste that is not a hazardous waste under reference (2) may be a Dangerous Waste under reference (1) and also mixed waste if radioactive constituents are present.

Fingerprint Analysis: An abbreviated waste analysis generally conducted to provide information that will verify the waste received matches the expected characteristics for that waste. The analysis will typically test for specific parameters, such as density, phase, pH, flash point, and total metals, expected to be in the waste based on the provided waste analysis.

Hazardous Waste: Those solid wastes designated by 40 CFR Part 261 and regulated by the United States Environmental Protection Agency (EPA). Reference (1) incorporates and administers the requirements of 40 CFR Part 261 in the State of Washington and designates such waste as either 'dangerous' or 'extremely hazardous'.

Incompatible Waste: Any dangerous waste which is unsuitable for placement in a particular device or facility because it may corrode or decay the containment materials, or it is unsuitable for mixing with another waste or material because the mixture might produce heat or pressure; fire or explosion; violent reaction; toxic dust, fumes, mists, or gases; or flammable fumes or gases.<sup>2</sup>

Land Disposal Restrictions (LDRs): Regulations specified in Part 268 of reference (2) which control wastes that may be land disposed and the standards for treatment prior to disposal.

Mixed Waste: A Dangerous Waste (i.e., designated under reference (1) as either 'dangerous' or 'extremely hazardous') that also contains a radioactive component defined by 10 CFR 20.1003, as source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954.<sup>2</sup>

Originator or Generator: Any person, by site, whose act or process produces dangerous waste or whose act first causes a dangerous waste to become subject to regulation.<sup>2</sup>

Process Knowledge: Determination of the chemical and physical nature of a waste by applying knowledge of the materials or the processes used. Typical sources of process knowledge are vendor information, Material Safety Data Sheets (MSDS's), prior characterizations, drawings, military specifications, work documents, and originating process.

Representative Sample: A sample that exhibits the same properties as the sample source.

Sampling Plan: A plan that specifies the procedural requirements for properly obtaining a representative sample in a given situation.

Spent material: Any material that has been used and as a result of contamination can no longer serve the purpose for which it was produced without processing.

Surrogate Analysis: Analysis based on data obtained from laboratory analysis of similar or chemically identical, non-radioactive wastes. Surrogate analysis is only used if the sample material accurately represents the regulated constituents in the mixed waste (i.e., those constituents regulated under reference (1)).

Toxicity Characteristic Leaching Procedure (TCLP): An Environmental Protection Agency approved laboratory test method to measure the mobility of toxic constituents in a waste.

Treatment by Generator (TBG): A process, such as solidification, performed by the generator in containers or tanks. This process changes the physical characteristics

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[2] The source of this definition is reference (1).

or chemical composition of a mixed waste and may result in the waste no longer being considered mixed waste. The waste might meet LDR's after treatment.

Uncommon Wastes: Waste from a stream in which the entire waste stream cannot be consistently characterized. These wastes are analyzed on a batch by batch basis.

Waste Stream: A grouping of wastes based on a single process source, similar physical characteristics, or similar treatment or disposal requirements.

#### **1.4 Responsibilities**

##### **1.4.1 Radioactive Waste Management Division, Code 105.2**

(a) Ensures that mixed waste is analyzed, reported, and managed in accordance with this instruction and reference (4). Provides engineering support for interface with the EPA, Naval Sea Systems Command (NAVSEA), and Ecology.

(1) Designates mixed waste by applying the RCRA, TSCA, and state of Washington regulations.

(2) Reviews the characterization of mixed waste items.

(3) Reviews and updates this instruction annually or as required to comply with changing requirements and regulations.

(4) Ensures compliance with MWAP and provides waste assessment oversight.

(5) Establishes waste acceptance requirements.

(6) Provides guidance and assistance on preparation of sampling instructions and on waste characterization.

(7) Maintains documentation of waste analyses, characterization, and designation.

(8) Interprets the regulations in regard to mixed waste management. Maintains a file of these regulatory interpretations.

(b) Provides radiological and hazardous waste engineering support for Naval nuclear work involving mixed waste.

(1) Coordinates collection of necessary information for waste analysis review of waste to be received from off-station.

(2) Characterizes mixed waste generated at PSNS.

(3) Directs transfers of mixed waste within the Shipyard.

(4) Provides engineering support and oversight for TBG operations.

(5) Provides engineering support and oversight for processing of mixed waste.

(6) Prepares sampling plans and directs testing to support characterization of mixed waste in their cognizance.

(7) Performs a biennial review of waste stream characterizations.

(8) Concurs in Technical Work Documents (TWDs) that may generate mixed waste.

#### 1.4.4 Safety and Health Division, Code 106.2

- (a) Provides guidance on personal protection requirements to personnel performing waste sampling and analysis.
- (b) Provides or obtains MSDS's as requested by waste originators or personnel performing waste characterizations.

#### 1.4.5 Environmental Division, Code 106.3

- (a) Maintains technical liaison with Code 105.2 on dangerous waste regulations and hazardous waste management.
- (b) Provides input to ensure that mixed waste analysis is consistent with hazardous waste analysis.

#### 1.4.6 Laboratory Division, Code 134

- (a) Prepares testing procedures and performs analysis as requested by Code 105.2.
- (b) Maintains current technical information and documentation of analysis, including applicable EPA and Ecology methods.
- (c) Concurs in procedures and sampling plans that deviate from sampling and analysis requirements.
- (d) Maintain Washington State Laboratory Accreditation for environmental sample analysis.

#### 1.4.7 Nuclear Engineering and Planning Department, Code 2300

- (a) Provides technical assistance to Code 105.2 for waste analysis, as requested, including design specifications, drawings, procedures, and other process information.
- (b) Identifies in TWDs where mixed waste may be generated. Provides sampling plans in Code 2300 TWDs where sampling is required. Specifies disposition of the waste in the TWD.

#### 1.4.8 Waste Originator

- (a) Ensures that the Radioactive Waste Information Sheet (RWIS) is filled out completely and accurately at the point of waste generation. The Radioactive Material Tag (RAMT) may be used to replace the RWIS when authorized.
- (b) Provides updated information on the origin or process that generates the waste to Code 105.2.

## **2. Facility Description**

Puget Sound Naval Shipyard generates a small amount of mixed waste as a result of radiological work on nuclear powered vessels. Additionally, PSNS accepts small amounts of mixed waste from off-station facilities that generate NNPP waste. Solid mixed waste streams are stored in a mixed waste storage facility (MWSF), Building 1002. Liquid mixed waste streams are treated to render them non-hazardous and disposed as low level radioactive waste (LLRW).

### **2.1 Waste Stream Identification and Designation**

The majority of mixed waste managed at PSNS is generated on-site. Occasionally PSNS accepts NNPP mixed waste generated at off-station facilities. Each mixed waste item is characterized and designated using the techniques described in this document.

### **2.2 Dangerous Waste Management Units (DWMU's)**

(a) Building 1002: The MWSF, Building 1002, was designed and constructed specifically to provide secondary containment for mixed waste generated by NNPP activities. In addition, the facility accepts small amounts of mixed waste from off-site facilities that generate NNPP waste.

Building 1002 is the storage location for the mixed waste generated or received at PSNS. The mixed waste stored inside the MWSF is contained in either metal drums or metal waste boxes. All stored waste streams are compatible. The facility is operated in accordance with the NNPP requirements, Washington State's Dangerous Waste Regulations, and the Toxic Substance Control Act requirements for the storage of radioactive, hazardous, and PCB waste, respectively.

(b) Building 983: Building 983 contains a 90-day accumulation area for mixed waste and is the Controlled Industrial Facility (CIF) where treatment by generator (TBG) is performed at PSNS. The CIF is also used for on-site processing of waste such as decontamination, segregation, packaging, and reclamation. Refer to reference (11) for more information about the mixed waste streams treated by PSNS.

### **3. Waste Analysis**

A critical aspect of mixed waste compliance is performing an accurate and in-depth waste analysis. Waste analysis involves an initial characterization of the waste, followed by waste designation. Information gathered during waste analysis is key to ensuring proper handling, storage, transportation, treatment, and disposal. Accurate waste analysis also ensures the Shipyard maintains compliance with all applicable RCRA, TSCA, and Ecology regulations, and permit restrictions for the management of mixed waste. This section provides the waste analysis guidelines and requirements for characterizing and designating mixed waste. General instructions on how to characterize and designate mixed waste are provided in Sections 5 and 6 of this plan.

#### **3.1 Waste Analysis Requirements**

The following are the regulatory requirements for waste analysis. As regulations may change, the current regulatory requirements will take precedence if there is a conflict between this document and the regulations. Code 105.2 will use the referenced documents listed to ensure compliance.

(a) Waste requires evaluation to determine if the waste is mixed waste and/or a dangerous waste. Ecology has authority for establishing regulations to follow in the designation of waste. Ecology has incorporated these regulations into reference (1). Use reference (1) to designate waste.

(b) Waste may require evaluation to determine if it is PCB waste. The EPA has defined and established these regulations in reference (3). Use reference (3) for determining PCB waste. PCB waste can be dangerous waste and as such, regulated by reference (1).

(c) Evaluate waste determined to be a mixed waste for LDRs as part of the disposal process. The LDRs of reference (2) are incorporated into reference (1). As a result, use both references (1) and (2) for LDR determination.

(d) Dispose of wastes determined to be non-hazardous as low level radioactive waste (LLRW).

(e) The waste analysis process supports proper packaging of the waste for storage and transportation. Use reference (6) to determine transportation requirements.

(f) Use reference (7) to determine compatibility.

#### **3.2 Documentation**

Documentation of the waste characterization is an important part of the characterization process. Code 105.2 will retain sufficient documentation to demonstrate regulatory requirements have been followed. Each mixed waste package will have a mixed waste profile portfolio (MWPP), as required and defined by reference (4). The MWPP must clearly demonstrate the methodology used to characterize the waste and include enough detail to allow re-creation of the characterization by an independent party. The MWPP will demonstrate how and why process knowledge was used, sources of process knowledge, and any analytical testing performed. Reference (4) lists documentation required to be included in the MWPP.

#### **3.3 Periodic Reanalysis of Waste Streams**

Code 105.2 will perform waste reanalysis to ensure that changes to a waste stream are identified and all current regulatory requirements are met. All mixed waste streams will be reanalyzed according to the following cases.

**3.3.1 Process Changes:** The waste analysis will be repeated when the process that generates a waste changes. Code 105.2 will complete and document the reanalysis in a timely manner after

the waste originators make notification of a process change or there is reason to believe the process or operation generating the mixed waste has changed.

3.3.2 Discrepancies with Waste Shipped Off-site: The waste will be reanalyzed in accordance with this instruction upon notification by an off-site treatment, storage, and disposal (TSD) facility that waste received from PSNS does not match an approved waste stream, preapproved waste analysis certification, and/or the accompanying waste manifest or shipping papers.

3.3.3 Reanalysis of Existing Waste Streams: There are no specified regulatory time interval requirements for waste stream reanalysis. However, to ensure a waste stream is being properly managed and designated, periodic reanalysis will be conducted per this instruction and the following:

- (a) Code 105.2 will perform a biennial review of all mixed waste streams generated at least once per year. Code 105.2 will update the characterization and designation of the waste stream if the review finds changes to the waste stream process, characteristics, or regulations since the last analysis. Sampling and testing will be performed biennially for those waste streams that use laboratory analysis.

- (b) All common waste streams generated at least once a year and all uncommon wastes will be analyzed on a case by case basis.

- (c) Code 105.2 will review waste analyses when regulations governing the waste stream or compliance laboratory procedures change.

3.3.4 Waste Received from Off-station: The waste received from off-station originates at other Naval facilities. The Shipyard concurs in the analysis of the waste prior to shipment. Off-station waste does not need to be sampled and tested upon receipt at the Shipyard due to acceptable knowledge of the waste.

#### 4. Waste Parameter Selection and Rationale

Waste analysis parameters must be selected for each waste in order to perform adequate waste characterization; obtain sufficient data to ensure compliance with applicable regulatory requirements; conform to permit conditions; and ensure effective waste management operations. Select the waste analysis parameters to use for waste characterization based upon the amount of process knowledge available for the waste. Use several parameters for wastes with little or no documented process knowledge to analyze for unexpected constituents and ensure compatibility.

##### 4.1 Parameters and Rationale

When characterizing NNPP mixed waste consider the parameters discussed in the following paragraphs and summarized in Table 1.

4.1.1 pH: Evaluate the pH of the mixed waste if the process that generated the waste indicates corrosive substances were used or if the process could have created a waste that exhibits a corrosive characteristic. Checking the pH ensures safe handling, storage, and treatment.

4.1.2 Flashpoint: Analyze waste suspected of being ignitable for its flashpoint. Analyses of wastes for ignitability using the flashpoint test method given in Table 1 is necessary to identify wastes that may be characteristically hazardous or that violate permit conditions.

4.1.3 Volatile Organic Compounds/Semi-volatile Organic Compounds: Analyze wastes for the presence of volatile organic compounds (VOCs) or semi-volatile organic compounds. The concentration of VOCs and semi-VOCs can be used to identify wastes that may violate permit conditions for storage and those wastes that would require special handling, treatment, or storage conditions. These parameters also affect the determination of applicable LDRs and treatment standards.

4.1.4 RCRA Toxic Metals (Lead, Cadmium, Chromium, Barium, Selenium, Arsenic, Silver, Mercury, Copper Oxide): The Shipyard identifies wastes that are regulated due to their RCRA toxicity by determining what metals and metal alloys are present in the waste. The information is used to identify applicable LDRs and treatment standards. Typically any debris, particulate matter, or waste that is known to contain metals or metal compounds will be evaluated for the presence of hazardous metals. The specific constituents analyzed in a given waste will depend on the type of waste and the amount of process knowledge known. For example, the Shipyard will include at a minimum lead, chromium, cadmium, and barium in the characterization of paint waste.

4.1.5 State Toxicity Criteria: The state of Washington has toxicity criteria in addition to the RCRA toxicity characteristics. Process knowledge and the waste analysis for metals and metal compounds provide the data necessary to determine the Washington state toxicity of the waste. The analysis of waste for the Washington state toxicity criteria is usually performed using the book designation method described in reference (1). The state toxicity determination ensures compliance with state regulations and permit conditions and allows identification of state-only LDRs.

4.1.6 Other Toxicity Characteristic Constituents: Constituents that exhibit RCRA toxicity characteristics include 1,1,1 trichloroethane, methyl ethyl ketone, and methylene chloride. When process knowledge or testing indicates a waste may contain a toxic constituent the waste analysis will include a determination of the presence and amounts of the applicable constituents. This information is used to determine LDRs and applicable treatment standards.

4.1.7 Radioactivity: Evaluate all mixed waste for radioactivity to determine applicable radiological controls in accordance with NNPP requirements.

4.1.8 PCBs: PCBs are considered a halogenated organic compound. PCBs are regulated by TSCA and can be regulated as dangerous waste per reference (1) under certain circumstances. Some

PCB waste is excluded from the requirements of reference (1), section 71. Testing the waste for PCBs ensures proper handling, treatment, and storage of the waste and allows the Shipyard to determine the applicable LDRs.

4.1.9 Persistent Constituents: Persistent compounds are either halogenated organic compounds (HOCs) or polycyclic aromatic compounds (PAHs). The persistent compounds found in NNPP mixed waste include 1,1,1 trichloroethylene and PCBs. Combine the results of EPA SW-8260, SW-8270, and SW-8082, if PCBs are not excluded by reference (1), to obtain the persistence value. The persistent constituent determination helps the Shipyard comply with permit conditions and properly handle, store, and treat the waste.

4.1.10 Asbestos: Evaluate mixed waste for asbestos when the waste is suspected of containing asbestos, such as lagging. Asbestos is not normally regulated as a hazardous waste. The Shipyard may need to consider alternate treatment options if the waste contains asbestos.

4.1.11 Compatibility: Evaluate any new waste or one of unknown chemical composition for compatibility with the other mixed waste in storage. Reference (7) provides guidance on determining the compatibility of dangerous waste. This evaluation ensures safe handling, storage, and treatment of the waste.

4.1.12 Listed Constituents: Puget Sound Naval Shipyard does not authorize the use of chemicals that create F-listed waste. Some F-listed wastes are stored in the MWSF. The F-listed constituents stored in the MWSF are:

- (a) F002: 1,1,1 trichloroethane and methylene chloride
- (b) F003: acetone, methanol, ethyl benzene
- (c) F005: methyl ethyl ketone (MEK).

4.1.13 Reactive Constituents: The mixed wastes currently generated and stored at PSNS are known to be non-reactive. If process knowledge of a waste that has an unknown chemical composition or unknown characteristics indicates the waste may be reactive Code 105.2 will work with the Laboratory to develop a sampling and analysis plan for that specific waste. The analysis plan will evaluate the waste for cyanide and sulfide using methods outlined in EPA SW 846, reference (8). The plan will ensure safe handling, storage, and treatment of the waste, ensure compliance with permit conditions, and provide information for determining the LDRs.

<p style="text-align: center;"><b>TABLE 1</b> <b>MIXED WASTE ANALYSIS PARAMETERS AND RATIONALE</b></p>			
<b>Parameter</b>	<b>Physical State</b>	<b>Test Method<sup>a</sup></b>	<b>Rationale</b>
pH	solid, semisolid	9045	Ensure safe handling, treatment, and storage of the waste; determine applicability of LDRs and state-only requirements.
	liquid	9040, 9041	
Flashpoint	liquid	ASTM Standard D-3278-78 <sup>b</sup>	Comply with permit conditions; determine applicability of LDRs.
	solid	Meets requirements of WAC 173-303-090(5)(a)(ii)	
Volatile organic compounds	solid, water, organic liquids	8260	Comply with permit conditions; determine need for special handling, treatment, or storage; determine applicability of LDRs.
Semi-volatile organic compounds	solid, water, organic liquid	8270	Comply with permit conditions; determine need for special handling, treatment, or storage; determine applicability of LDRs.
PCBs	solid, water, organic liquid	8082	Ensure proper handling, treatment, and storage; determine applicability of LDRs.
Lead Cadmium Chromium Barium Selenium Arsenic Silver Mercury Cuprous oxide	solid, semisolid, liquid	3051, 1311, 6010, 7470, 7760	Identify applicable LDRs; ensure compliance with permit restrictions and treatment standards.
Persistent constituents	solid, water, organic liquid	8260, 8270, 8082	Comply with permit conditions; determine need for special handling, treatment, or storage; determine applicability of LDRs.
Asbestos	solid	Polarized light microscope <sup>c</sup>	Ensure proper handling, storage, and disposal.
Radioactivity	solid, liquid, semisolid	NNPP test methods	Ensure proper handling, storage, and disposal; determine applicability of LDRs.

a. All test methods are found in "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", EPA Publication SW-846, unless otherwise noted.

b. American Society for Testing Materials (ASTM).

c. 40 CFR Part 763 Subpart E App E.

## 5. Waste Characterization Methodology

The Shipyard uses two basic methods, process knowledge and laboratory analysis, to obtain sufficient information to ensure mixed waste is properly characterized. PSNS evaluates the mixed waste for properties such as chemical composition, ignitability, corrosivity, reactivity, toxic characteristics, waste source, physical properties, and compatibility with other wastes and process equipment. The Shipyard follows the guidelines given in section 5.3 of this instruction to perform mixed waste characterization in accordance with reference (1).

### 5.1 Process knowledge

Process knowledge is the preferred method for mixed waste analysis due to the radioactive nature of mixed waste. Use of process knowledge, whenever sufficient knowledge exists, minimizes personnel exposure to radiation and contamination. Use process knowledge when there is sufficient information on the waste item to clearly identify the presence or absence of all applicable constituents or characteristics causing the waste to be regulated under reference (1). Document all process knowledge used in characterizing a waste in the mixed waste profile portfolio (MWPP) for final designation and determination of LDRs. Process knowledge used during waste characterization may include, but is not limited to:

5.1.1 Drawings: Use drawings and contained references to identify components of a mixed waste that may contain a constituents that cause the waste to be regulated under reference (1). Obtain drawings from the manufacturer and from the Naval or Contract Engineers who designed the item under evaluation.

5.1.2 Technical Work Documents (TWDs): Use information from the TWDs associated with the mixed waste to determine any constituents that cause the waste to be regulated under reference (1) introduced during work, identify any drawings related to the waste, and identify any technical information related to the manufacture or use of the item. TWDs include instructions for the manufacturing and assembly process, operational instructions, and procedures removing the item or creating the waste.

5.1.3 Vendor Information: Use vendor information about the chemical content of the mixed waste when available to identify any constituents that cause the waste to be regulated under reference (1), and concentrations of such constituents. Vendor information may include technical manuals, Material Safety Data Sheets, chemical specifications, and product label information.

5.1.4 Government Specifications: Use military and federal specifications, if available, to identify constituents that cause the waste to be regulated under reference (1). Vendors providing the material are required to meet these specifications and can detail the chemical constituents. Government contracts also may include specifications.

5.1.5 Originating Process: Obtain knowledge of the process that created the mixed waste or how the mixed waste was used from information provided by the generator and from applicable work documents that were used to generate the waste.

5.1.6 Prior Characterizations: Obtain analyses and data from previously characterized mixed waste of similar waste types.

5.1.7 Physical Observation of the Waste: Observing the waste in conjunction with other process knowledge may assist in the waste characterization process.

### 5.2 Laboratory Analysis

Use laboratory analysis when there is not enough information on the waste item to clearly identify the presence of all constituents that cause the waste to be regulated under reference (1) or characteristics that may cause such waste to be regulated under reference (1). Laboratory analysis performed to facilitate waste characterization includes:

**5.2.1 Screening Sampling and Analysis:** When appropriate use NNPP screening sampling and analysis methods to verify the presence of expected chemical constituents in the mixed waste. Select the test methods based on process knowledge. NNPP screening sampling and analysis methods may differ slightly from methods generally approved by Ecology in order to minimize personnel exposure to radioactivity while providing adequate information about the waste. For example, PSNS collects TCLP samples for screening in plastic containers rather than the glass containers required by Ecology. The plastic containers help protect sampling and analysis personnel from radioactive contamination by minimizing the risk of a mixed waste spill caused by a broken glass sample container.

**5.2.2 Compliance Sampling and Analysis:** Compliance sampling and analysis is required if the necessary properties cannot be determined from process knowledge. Conduct compliance sampling and analysis in accordance with this instruction relative to parameter selection, analytical procedure selection, sampling procedures, and laboratory selection. Appendix A and Appendix B contain requirements on compliance sampling and testing, respectively. Radioactive samples should only be obtained if process knowledge or non-radioactive/surrogate samples are not sufficient or are impractical.

**5.2.3 Surrogate Analysis:** Surrogate analysis is the process of analyzing a chemically identical, non-radioactive waste to characterize a mixed waste. There are two common approaches to using surrogate analysis: sample and test wastes from a chemically identical, non-radioactive waste stream or process, or create a non-radioactive mock-up of the waste using knowledge of the process and test the result. Adhere to all compliance sampling and testing protocols when testing a surrogate material. Maintain the same degree of documentation as required by the compliance sampling and testing protocols. Perform surrogate analysis to written procedures.

### **5.3 Characterization Methodology**

The complete process for characterizing each individual mixed waste produced at PSNS cannot be detailed in this instruction due to the wide variability of wastes and circumstances. This section contains general requirements and guidelines for performing mixed waste characterization in accordance with reference (1).

**5.3.1 Treatment by Generator Wastes:** The waste analyses of mixed waste streams that are rendered non-hazardous by treatment within the Shipyard are presented in the Treatment by Generator Waste Analysis Plan, reference (11).

**5.3.2 General Procedure for Mixed Waste Evaluation:** Code 105.2 is responsible for evaluating and characterizing mixed waste at PSNS. The general procedure for mixed waste characterization is discussed in the following paragraphs.

(a) Evaluate the RWIS and any other information provided by the mixed waste generator. Ensure the RWIS is complete. Contact the generator in a timely manner if any information is missing or questionable. The RAMT may be used when authorized.

(b) Collect and record all process knowledge that could provide credible data on the source, process, composition, or other knowledge. The data could include the TWD, a drawing, MSDS, or any other useful information. Use the information provided in the process log if provided.

(c) Information from a previous characterization may be used if the waste is the same as or similar to a previously characterized waste. Provide documentation that verifies the wastes are similar.

(d) Choose the parameters for which the waste will be analyzed based on the process knowledge. Section 4 of this instruction provides a description of each of the parameters. Choose as many of the parameters as necessary to obtain a detailed analysis of the waste.

(e) Use the experience of other personnel. Code 105.2 personnel can provide guidance in determining what parameters and methods are needed for analysis of the mixed waste.

(f) Determine if the process knowledge available is sufficient to accurately characterize the waste. If the process knowledge is insufficient, sampling and testing are required. Sampling and testing may also be necessary to verify the presence of expected waste constituents or to demonstrate regulatory compliance. Prepare a sampling methodology and instruction, if not already available, in accordance with Appendix A of the MWAP to facilitate sampling of the mixed waste. Determine what parameters and test methods must be used to assemble a complete profile of the waste's compatibility, corrosivity, reactivity, toxicity, and ignitability.

(g) Once all process knowledge and/or analytical results have been collected, prepare the mixed waste profile record (MWPR) and MWPP in accordance with reference (4). The MWPR provides the historical documentation of the waste analysis and must be as complete as possible. Maintain a copy of the documents used to demonstrate process knowledge in the MWPP if no other administrative instruction requires the documents be retained for a longer period of time. Refer to reference (4) for guidance on document retention.

(h) Prepare a written summary of the characterization process. The summary should be a description of the parameters used to characterize the mixed waste; how and why the parameters were chosen; references used for the characterization; and justification for any assumptions made. The summary should be detailed enough to allow the characterization to be re-created at a later date. Sign and date the summary.

#### **5.4 Additional Guidance**

Use the following additional guidance when documenting the mixed waste characterization.

5.4.1 References (internally generated shipyard documentation) should clearly identify the constituent material by chemical composition or unique generic material description, such as polyethylene plastic, Buna-N rubber, or cuprous oxide. Minimize the use of acronyms and product nicknames not commonly known.

5.4.2 Do not use the waste package/container weight and volume in the weight averaging calculations. Include materials added to the waste for the purpose of liquid absorption or padding, such as paper absorbent and tape, in the characterization of the waste.

5.4.3 Ensure any prior characterizations referenced contain adequate documentation to support the current analysis.

5.4.4 Toxicity characteristics: Weight averaging is acceptable when evaluating a complex component that cannot be easily separated into individual components. For instance, to determine whether a complex component would contain sufficient toxic metals to fail the TCLP test consider the entire component as a whole rather than each piece of the component. Paint coatings and plating that contain lead, chromium, or cadmium are not a separate part of a component. Paint coatings and plating are inclusive to the component to which the paint or plating is adherent. Consider the paint or plating as part of the component.

(a) Use either of the following methods to determine the toxicity of suspected toxic wastes for which TCLP results are not available:

- compare the total weight percent of each TCLP regulated constituent to the TCLP maximum weight percent as given in Table 3, or
- compare the concentration of the each TCLP regulated constituent in the waste to 20 times the TCLP regulatory level (ppm) as given in Table 3.

Use a conservative estimate if laboratory data or literature is limited. For example, use the highest chromium concentration given in the available literature or test data for a type of paint of unknown chromium concentration.

(b) Use TCLP leachability proportioning to demonstrate a waste characterization when the total weight percent or concentration of the TCLP regulated constituent is nearly equal to the regulatory limit. The method applies the proportion of the expected TCLP leachability of the individual parts of a complex component to the entire component. Figure 2 provides an example of TCLP leachability proportioning for brass and bronze at specific lead concentrations.

*For example: Consider a complex component that consists of two materials. One component part leaches Cadmium at 5.0 ppm in a TCLP test. This part constitutes 10 percent of the complex component. No other Cadmium is present. The proportioned TCLP leachability of the entire complex component is:*

$$[5.0 \text{ ppm Cadmium} \times 10\%] + [0.0 \text{ ppm Cadmium} \times 90\%] = \underline{0.5 \text{ ppm Cadmium.}}$$

*Therefore, the complex component in this example does not exceed the limit of 1.0 ppm.*

(c) For materials estimated to contain TCLP regulated constituents in quantities approaching the TCLP limits justify the estimated values in the MWPP. Include a similar justification in the MWPP if the estimated TCLP values are used in the waste designation. Include any supporting documentation for the estimated TCLP.

(d) Table 2 and Figure 2 provide leachability data from some common metals and alloys encountered in radioactive work.

**5.4.5 Brass and bronze:** Many items made of brass or bronze contain lead in sufficient quantities to require the items be regulated as hazardous waste. Use the following guidance when evaluating brass and bronze.

(a) Brass and bronze that are known to contain less than or equal to 1% lead are not regulated as hazardous wastes.

(b) Brass or bronze forging, such as fasteners, pipes, tubing, and electrical parts, typically contain small percentages of lead to allow for easier machining. Assume brass or bronze forging contains 3% lead unless the lead content is known.

(c) Assume brass or bronze casting, such as valves, pipe fittings, elbows, and flanges, contains 8% lead unless the lead content is known.

(d) Assume bearing and bushing materials made of brass or bronze contain 15% lead unless the lead content is known.

(e) TCLP proportioning per paragraph 5.4.4(b) may be performed using the above conservative percentages. Figure 1 provides guidance on proportioning items containing brass or bronze components.

(f) Figure 2 shows the relationship between total lead content and TCLP leachability of brass and bronze based on Shipyard testing of lead alloys. The graph may be used to determine leachability factors for leachability averaging of non-homogeneous waste containing brass or bronze components in accordance with paragraph 5.4.4.(c).

**5.4.6** Perform PCB evaluations using the guidance in section 4.1.7 and Table 1.

**5.4.7** Reference (7) provides guidance for evaluating the compatibility of a waste.

**TABLE 2**  
**TCLP TEST RESULTS FOR LEACHABILITY FACTORS**

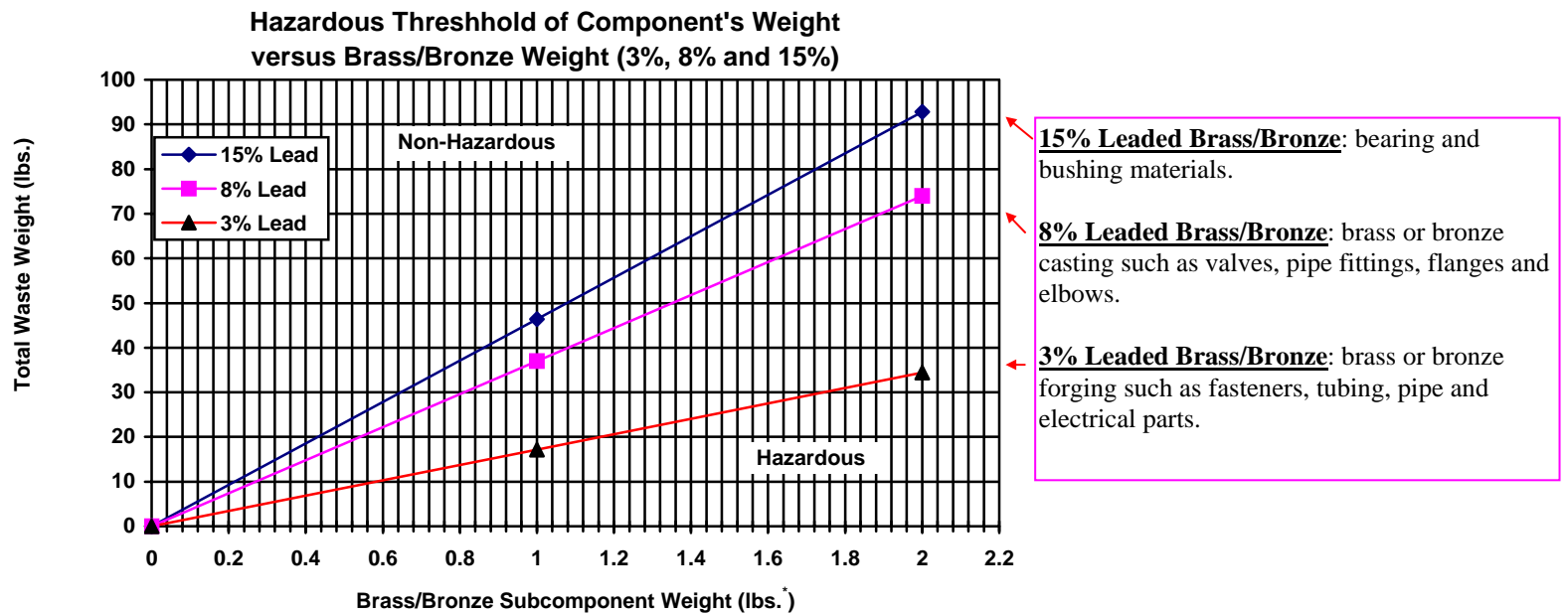
METAL/ALLOY	MATERIAL COMPOSITION	TCLP TEST RESULT (ppm)	TCLP LIMIT (ppm)	ASSESSMENT
Silver-Braze Alloy	Ag 34%	Ag < 1.0	Ag 5.0	Pass
	Cd 17%	Cd 2.7	Cd 1.0	Fail
Cadmium Plating	Cd (Chromated)	Cd 362	Cd 1.0	Fail
		Cr 0.2	Cr 5.0	Pass
Leaded Brass/Bronze	Pb 22.2%	Pb 251	Pb 5.0	Fail
	Pb 1.4%	Pb 25.5	Pb 5.0	Fail
	Pb 1.02%	Pb 2.6	Pb 5.0	Pass
Chromium Plating	Cr 100%	Cr 0.8	Cr 5.0	Pass
Zinc galvanize (electrodeposited)	Zn (Chromated)	Cr 0.3	Cr 5.0	Pass
Zinc galvanize (Hot dipped)	Zn with lead	Pb < 0.1	Pb 5.0	Pass
Silver Plating	Ag 100%	Ag 2.4	Ag 5.0	Pass
Zinc Anode	Zn with trace Cd and Pb	Cd 0.46	Cd 1.0	Pass
		Pb 0.003	Pb 5.0	Pass
Leaded Steel	Pb 0.2%	Pb < 0.1	Pb 5.0	Pass
430 Stainless Steel	Cr 16.5%	Cr 0.3	Cr 5.0	Pass
410 Stainless Steel	Cr 12.5%	Cr 2.2	Cr 5.0	Pass

**TABLE 3**  
**TCLP SPECIFICATIONS**

	TCLP Regulatory Level (ppm)	Max Weight Percent in Solid
<b>Metals</b>		
Arsenic	5.0	0.01
Barium	100.0	0.2
Cadmium	1.0	0.002
Chromium	5.0	0.01
Lead	5.0	0.01
Mercury	0.2	0.0004
Selenium	1.0	0.002
Silver	5.0	0.01
<b>Volatiles</b>		
Benzene	0.5	0.001
Carbon Tetrachloride	0.5	0.001
Chlorobenzene	100.0	0.2
Chloroform	6.0	0.012
1,2 Dichloroethane	0.5	0.001
1,1 Dichloroethylene	0.7	0.0014
Methyl Ethyl Ketone	200.0	0.4
Tetrachloroethylene	0.7	0.0014
Trichloroethylene	0.5	0.001
Vinyl Chloride	0.2	0.0004

**FIGURE 1**  
BRASS/BRONZE TCLP PROPORTIONING GRAPH

Instructions: plot the total component weight versus the weight of the brass/bronze sub-component. If the point is above the applicable 3%, 8%, or 15% line, the component is non-hazardous for leaded brass/bronze. If it lies on or under the applicable line, the component is hazardous.



\* Note that the 'X' axis can be read as 0 to 2 Lbs., 0 to 0.2 Lbs., 0 to 20 Lbs. or 0 to 200 Lbs. Once a curve is selected the relationship between waste weight and bronze weight is linear. The 'Y' axis must be adjusted by the same multiplier as the 'X' axis when a different scale is used.

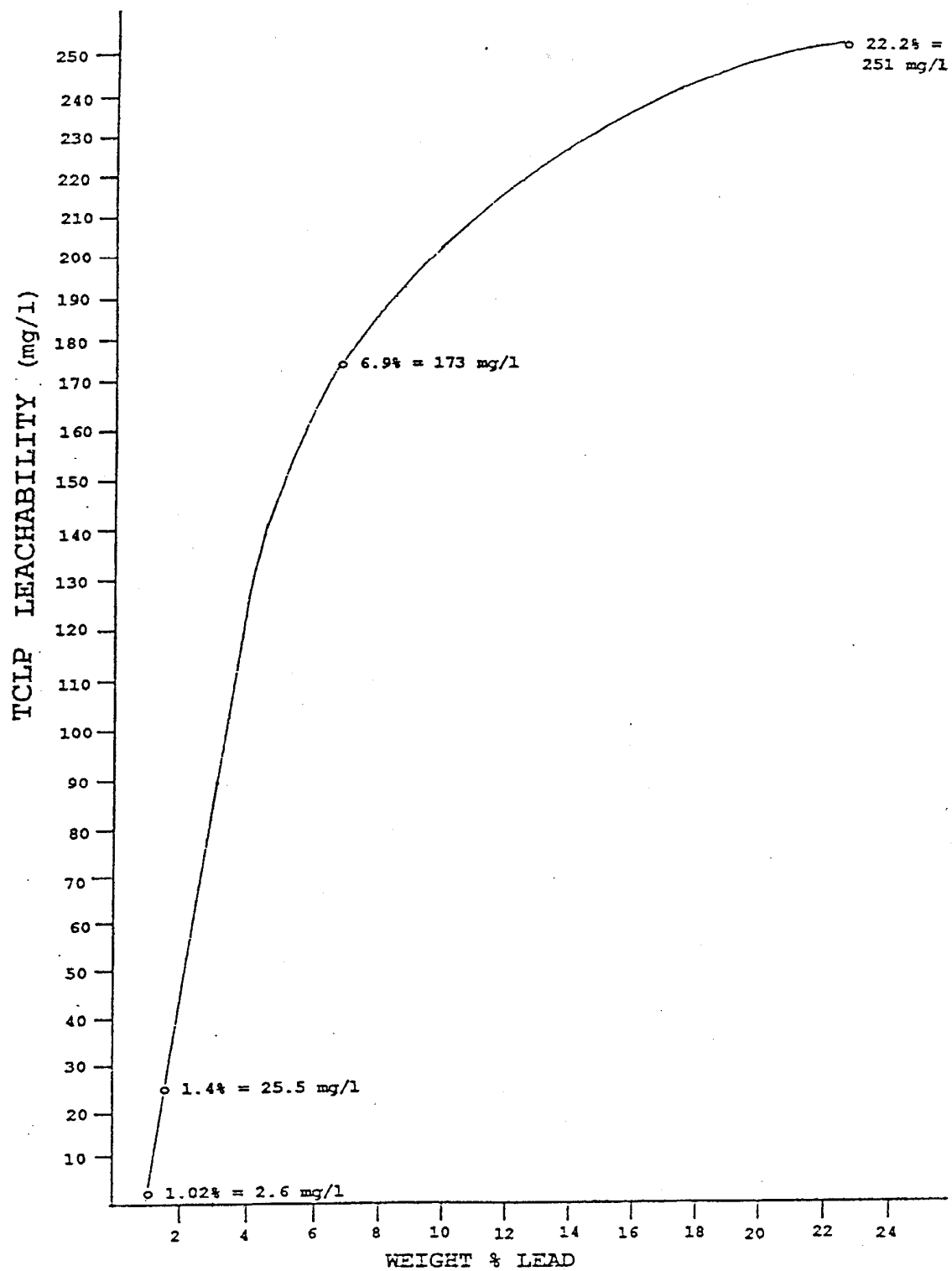


Figure 2  
LEAD LEACHABILITY FROM BRASS/BRONZE

## **6. Waste Designation**

After the characterization is complete, Code 105.2 will review the MWPP and designate the waste. Code 105.2 will review the MWPP for completeness and accuracy and note any questions or errors. Following any necessary revision of the MWPP Code 105.2 will designate the waste in accordance with section 70 of reference (1) and complete and sign the applicable portions of the MWPR.

### **6.1 Designation**

The basic designation process is summarized in the following paragraphs.

6.1.1 Determine if the waste is a discarded chemical product. [reference (1), section 081]

6.1.2 Determine if the waste is a listed dangerous waste source using reference (1), section 082.

6.1.3 Determine if the waste exhibits any dangerous waste characteristics. [reference (1), section 090]

6.1.4 Determine if the waste meets any of the dangerous waste criteria. [reference (1), section 100]

(a) Toxicity is determined by using the book designation procedure or bioassay tests. The Shipyard uses the book designation procedure, reference (1), section 100(5)(b), almost exclusively to evaluate mixed waste against the toxicity criteria.

(b) Persistence: The known persistent constituent concentrations are summed to determine the total HOC concentration and the total PAH concentration. The waste is then evaluated against the criteria listed in reference (1), section 100(6).

6.1.5 Determine if the waste is in an excluded category of waste [reference (1), section 071].

6.1.6 Determine if the waste is a dangerous waste, an extremely hazardous waste, or is considered non-hazardous radioactive waste. Assign the applicable dangerous waste numbers.

6.1.7 Determine if the waste needs to be controlled under TSCA.

### **6.2 Compatibility and LDR Determination**

Use the designation to aid in determining the compatibility of the mixed waste to the other mixed wastes in storage and to identify any LDRs.

6.2.1 Determine the compatibility of the waste with the others stored in the MWSF. [reference (7)]

6.2.2 Determine what LDRs apply to the waste in accordance with references (1) and (2). Include a list of underlying constituents that cause the waste to be regulated under reference (1), if applicable.

### **6.3 Documenting Designations**

Include a record of all dangerous waste numbers assigned, LDRs, and a summary of the parameters and characteristics used in the designation as part of the MWPP.

## APPENDIX A

### SAMPLING REQUIREMENTS

#### 1. Sampling Strategies

When sampling is necessary the cognizant technical code will develop a written sample plan. Code 105.2 will provide assistance if requested. Chapter 9 of reference (8) provides guidance on sampling and sampling plans and is the basis for this appendix. Code 105.2 must concur on all sampling plans or procedures containing sampling plans. This concurrence may be provided by a designated branch head within Code 105.2.

##### 1.1 Sampling Objectives

Prepare sampling plans to meet the following objectives.

1.1.1 Ensure the sample is representative of the waste being sampled.

1.1.2 Collect an uncontaminated sample.

1.1.3 Present the sample to the lab in a container that is compatible with the waste, will not result in sample degradation while awaiting analysis, and will allow the laboratory to perform the desired analysis.

1.1.4 Ensure the sample and sampling method can be traced back to the material being sampled.

1.1.5 Specify the size of the samples required.

1.1.6 Specify the chemical constituents for which the laboratory will analyze the sample. Sampling personnel use this information to complete the Sample Analysis Request (SAR) form. The SAR is sent to the laboratory with the sample.

##### 1.2 Sample Types

The type of sample collected will be based on the parameters selected for analysis and the physical state of the waste. Specify the type of sample to be used in the sampling plan. Two basic types of samples can be taken as described in the following paragraphs.

1.2.1 The grab/discrete sample is an individual sample taken from a single location at a specific time. As a result, the analytical results represent the specific sample site. Several grab/discrete samples can be taken and statistically evaluated to determine how well the samples actually represent the material being sampled. Grab/discrete samples can also be used to characterize homogenous waste streams.

1.2.2 A composite sample involves obtaining multiple grab/discrete samples from the waste. The samples are mixed together and the mixture presented to the lab for analysis. This type of sample will give analytical results as an average constituent concentration.

##### 1.3 Selection of Sampling Sites/Locations

1.3.1 Sampling would normally be conducted at the site of waste generation or at a 90-day accumulation area prior to transferring the waste to the MWSF. Certain unusual circumstances would require that the Shipyard transfer mixed waste from the MWSF to a Radiological Work Facility for additional characterization (chemical and/or radiological). This additional characterization would become necessary if the treatment facility targeted to take the waste changes or if the waste acceptance criteria of the treatment facility requires additional characterization.

1.3.2 In order to obtain a representative sample the cognizant technical code must specify the exact location on the waste item in which to take the sample.

#### **1.4 Number of Samples**

More than one sample may be required to properly evaluate a waste. The physical characteristics and variability of contaminants in the waste affect the number of samples needed. The cognizant technical code will specify the number of samples required or the methodology to use to determine the required number of samples. A sample plan may be very simple, such as obtaining a single grab/discrete sample from a drum, or very complicated, such as establishing grids and taking composite samples from each grid location. Additional guidance can be obtained from Chapter 9 of reference (8).

#### **1.5 Sampling Frequency**

Sample mixed waste when data is needed to assist in waste characterization or for a periodic re-analysis of waste streams. Refer to section 3.3 of the main body of this instruction for waste stream re-analysis guidance.

#### **1.6 Sample Collection and Handling Techniques**

The sampling plan must contain all sampling and handling techniques. If the sampler feels the plan is inadequate, the sampler must resolve the deficiencies with the author of the sampling plan prior to sampling. Sampling methods for special types of waste are specified in section 110 of reference (1). Ecology must approve an equivalent method if the sampling method will deviate from those specified in reference (1), section 110.

#### **1.7 Physical Properties of the Waste**

Consider the physical properties of the waste during the development of a sampling plan. Items that should be addressed are:

1.7.1 The homogeneity of the waste and

1.7.2 The physical state of the waste (gas, liquid, or solid). This property may prevent the sample specified from being obtained without further instructions. For example, TCLP samples of solid waste may need to be machined in order to meet the particle size requirements for analysis.

#### **1.8 Chemical Properties of the Waste**

The chemical properties of the waste may need to be addressed in developing a sampling plan. Consider the following:

1.8.1 A waste that has the characteristics of ignitability or reactivity may require special handling techniques to protect the sampling technicians and laboratory personnel.

1.8.2 Ensure the sampling technique specified will result in representative samples of the waste, not products of reaction of the waste with the air or sample equipment.

#### **1.9 Special Circumstances or Considerations**

Some waste may require special considerations for obtaining samples. Highly corrosive liquids, for example, may require unique handling procedures or sampling techniques. Special radiological conditions may warrant additional considerations.

#### **1.10 Authoritative Sampling**

Authoritative sampling is used when sufficient historical, site, or process knowledge is available to accurately assess the chemical and physical properties of a waste. This type of sampling involves the selection of sample locations based on knowledge of the waste distribution, waste properties, and waste management practices. The validity of the sampling depends upon the accuracy of the information used. The rationale for the selection of the sample locations is critical and must be well documented.

#### 1.11 Random sampling

Use random sampling techniques when insufficient knowledge exists to perform authoritative sampling (see Table A-1).

**TABLE A-1**  
**RANDOM SAMPLING TECHNIQUES**

Type	Description	Use	Advantages/Disadvantages
Random (simple, stratified, and systematic)	Techniques where sample selection and location are determined through the application of statistical methods.	Used to collect representative samples where data are insufficient to justify authoritative sampling.	See discussion below for each respective random sampling technique.
Simple Random	All location/points in a waste or unit from which a sample can be attained are identified, and a suitable number of samples are randomly selected.	Used to collect representative samples of waste that are heterogeneous	<u>Advantage:</u> Most appropriate where little or no information is available concerning the distribution of chemical contaminants. <u>Disadvantage:</u> May misrepresent waste streams with areas of high concentration of stratification.
Stratified Random	Areas of non-uniform properties or concentrations are identified and stratified. Subsequently, simple random samples are collected from each stratum of the waste.	Used to collect representative samples from waste or units that are known to have areas of non-uniform properties (strata) or concentrations (hot spots).	<u>Advantages:</u> Provides for increased accuracy of waste streams representation if strata or a typically high or low concentration area is present. <u>Disadvantage:</u> Requires greater knowledge of waste stream than for simple random sampling and may require sophisticated statistical applications.
Systematic Random	The first sampling point is randomly selected. All subsequent samples are collected at a specific distance from the previous sample.	An alternate procedure used to collect representative samples from heterogeneous waste streams; allows simplified sample identification.	<u>Advantages:</u> Easier sample identification and collection than other techniques. <u>Disadvantages:</u> May misrepresent waste streams with unknown areas of high concentration or stratification.

## **2. Selecting Sampling Equipment**

### **2.1 Physical Parameters**

The physical properties of the waste will affect the type of sampling equipment to use. Chapter 9 of reference (8) provides a description of various types of sample equipment. Common sampling devices used in the Shipyard include scoops, shovels, and suction pumps. Code 105.2 must approve the use of sampling devices not described in chapter 9 of reference (8). This approval may be provided by a designated branch head within Code 105.2.

### **2.2 Chemical Parameters**

The equipment used in sampling must be compatible with the waste and not susceptible to reactions that might alter the physical and chemical characteristics of the waste.

### **2.3 Waste-specific or Site-specific Factors**

Waste-specific or site-specific factors may also affect the use of sampling devices. Sludge and highly corrosive waste may alter the use of standard sampling equipment. If a waste is located in a container with limited access, standard sampling equipment may not be suitable or may need modification.

### **2.4 Equipment**

The Shipyard uses disposable sample equipment if possible. If sample equipment will be reused, the sampling plan must provide instructions for maintenance and decontamination.

## **3. Sampling Preservation and Storage**

### **3.1 Preservation**

The sample will be delivered to the laboratory as soon as practicable after it is collected. If the sample cannot be delivered to the lab by the end of the shift during which it was collected, employ sample preservation techniques, if applicable, to ensure the integrity of the waste remains intact while the sample is transported to the laboratory and/or while temporarily stored. Table A-2 contains preservation requirements. The sampling plan will provide guidance on sample preservation requirements, methods, and storage for the time between sample collection and delivery to the laboratory. Code 134 will handle the samples within the laboratory facility in accordance with reference (5) instructions.

### **3.2 Refrigerating Samples**

Transfer samples requiring refrigeration to the custody of the laboratory immediately after the samples are collected.

## **4. Quality Assurance and Quality Control Procedures**

### **4.1 Quality Assurance (QA) is accomplished by the following.**

4.1.1 Sampling plans and procedures containing a sampling plan are prepared by the cognizant technical code with concurrence from Code 105.2.

4.1.2 The chain of custody protocol is used for all samples (see section 4.3 of this appendix).

4.1.3 The Shipyard participates in the internal mixed waste self-assessment program, as required by reference (4).

**4.2 Quality Control (QC)** is established by reference (5) and additional requirements specified in the sampling plan. Sampling plans will periodically specify one of the following types of QC methods to be used in the field.

4.2.1 Field duplicates are independent samples that are taken from the same location at the same time and are used to measure the effectiveness of obtaining representative samples. The precision of the field duplicates provides a reflection of the variance inherent in the waste composition and the sample technique. Field duplicates should be collected from a homogenized sample (solid/sludge) or as consecutively collected samples (liquid). Field duplicate samples should be collected at a frequency of 10 percent for solids/sludge and liquid samples.

4.2.2 Trip blanks are sample containers prepared with an inert material, such as deionized water, and carried into and out of the field but are not opened at any time during the sampling event. If the trip blank is contaminated, the source of the contamination is assumed to be the container itself, the environment in which the trip blank was prepared, or some other source located outside the sample area. Trip blanks are provided by the laboratory personnel and should be used for each sampling event that includes volatile organic compound analysis.

4.2.3 Equipment blanks are prepared prior to sampling by running deionized water over sampling equipment and collecting the water into a clean sample container. If the equipment blank is contaminated, the source of contamination is assumed to be equipment used during the sampling operations. An equipment blank or field blank should be collected at a frequency of 10 percent of sampling events.

4.2.4 Field blanks are prepared in the field by filling a clean container with deionized water and appropriate preservatives, if any, for the specific sampling activity. Field blanks are collected between sampling locations or after sampling is completed, following decontamination of sampling equipment, where applicable. If contaminants are found in the field blank, it is assumed that environmental factors, such as airborne contamination; sampling procedures, causing cross contamination; or contaminated equipment were contributing to the concentration of hazardous waste constituents found in the sample. An equipment blank or field blank should be collected one time out of every 10 sampling events.

4.2.5 Split samples are typically collected for enforcement purposes and as a check on the Shipyard's analytical program and data record keeping. The sample is collected, and the sample volume is divided into halves. Each half is dispensed it into a different container.

### **4.3 Chain of Custody**

The SAR and proper logging, labeling, and handling assure the chain of custody for samples. Sampling personnel fill out the SAR and maintain the sample log. Reference (4) specifies labeling and sample logbook requirements. Reference (9) describes the SAR and how it is used. Follow reference (5) once the Shipyard Laboratory receives the samples.

## **5. Health and Safety Protocols**

The Shipyard has programs in effect to ensure the safety of personnel handling mixed waste. At a minimum, all mixed waste will be handled in accordance with the proper Personnel Protective Equipment (PPE) for the radioactive content of the waste. The cognizant technical code must use process knowledge to determine the need for additional PPE for sampling and analysis and will specify in the required PPE in the sampling plan. Code 105.2, with assistance from Code 106.2, will establish the PPE requirements for a mixed waste with little or no known characteristics.

## 6. Sampling Plans

Sampling plans may be included in an existing TWD that generates or handles the waste, in a separate TWD, or in a standing instruction. The sampling plan will specify or refer to a procedure that contains the following elements:

- (a) Description of the waste to be sampled.
- (b) Parameter(s) for which to sample and analyze.
- (c) Sampling location, if the sampling location will affect the sampling.
- (d) Sample size and number of samples.
- (e) Sample container type.
- (f) Sampling technique and equipment.
- (g) Decontamination of sampling equipment, if it will be re-used.
- (h) Additional training, if required.
- (i) Preservation requirements, if applicable.
- (j) Any special instructions necessary to ensure a representative sample is obtained.
- (k) Sample type (composite or grab/discrete).
- (l) Special health and safety protocols associated with the sampling.
- (m) Applicable quality control instructions or methods for use in the field.

**TABLE A-2**  
**SAMPLE PRESERVATION METHODS**

Parameter to Test	Waste Matrix	Sample Size	Container Material	Preservation Requirements	Max. Hold Time
Volatile Organic Compounds	Water and Organic Liquids	Two 40 ml	Glass with PTFE Lined Cap	Cool to 4° C, NaHSO <sub>4</sub> to pH<2 No Airspace	7 Days
	Solid	40 mL vials or 125 mL wide mouth	Glass with PTFE Lined Cap	Cool to 4° C	14 Days
Semi-Volatile Organic Compounds	Water	1000 ml	Glass with PTFE Lined Cap	Cool to 4° C,	7 Days
	Solid	250 mL wide mouth			Extract samples within 14 days; analyze extracts within 40 days following extraction
	Organic Liquids	40 ml			14 Days
pH	Solid/ Semisolid	5 g	Plastic or Glass	None	None
	Liquids	40 ml		None	2 Hours
PCBs	Water	1000 ml	Glass with PTFE Lined Cap	None	None
	Solids	10 g			
	Oils	40 ml			
Flashpoint	Liquids	40-50 ml	Glass	None	None
RCRA Toxic Metals (TCLP) <i>Mercury</i> <i>Lead</i> <i>Cadmium</i> <i>Chromium</i> <i>Barium</i> <i>Selenium</i> <i>Arsenic</i> <i>Silver</i>	Solid/ Semisolid	110 g	Plastic or Glass	None	6 Months (28 Days for Mercury)
RCRA Toxic Metals (Total Metals) <i>Mercury</i> <i>Lead</i> <i>Cadmium</i> <i>Chromium</i> <i>Barium</i> <i>Selenium</i> <i>Arsenic</i> <i>Silver</i>	Solid/ Semisolid	5 g	Plastic or Glass (except Mercury)  Glass (Mercury)	None	24 Hours (Chromium VI) 28 Days (Mercury) 6 Months (all others)
	Liquids	500 ml ( Cr VI and Hg)		HNO <sub>3</sub> to pH<2 (except Cr VI-cool to 4° C)	

**Notes:** Preservation requirements only apply if the sample cannot be delivered to the lab by the end of the shift.

## **APPENDIX B**

### **LABORATORY TESTING AND ANALYTICAL METHODS**

#### **1. Selecting a Laboratory**

The Shipyard Laboratory is the primary facility used for all compliance analysis of waste and is accredited by the State of Washington. Off-site facilities may be used if the Shipyard Laboratory's work load is very high or the Shipyard Laboratory cannot perform a particular analytical procedure, such as biological testing as specified in *Biological Testing Methods DOE 80-12 Revised June 1992*. A contractual agreement between the Shipyard and the off-site laboratory is required to perform off-site waste analysis. The cognizant technical code will coordinate with Code 134 and Code 105.2 to choose the laboratory and award the contract. Refer to reference (10) for guidance on selecting an off-site laboratory. Provide Code 105.2 a copy of all analytical reports on any mixed waste analyzed by an off-site laboratory.

#### **2. Comprehensive QA/QC Program (both qualitative and quantitative)**

The Shipyard Laboratory has a comprehensive QA/QC program, addressing both the qualitative and quantitative aspects of laboratory operations (see reference (5)). Included in reference (5) are instructions on the following:

- (a) sample handling practices and chain of custody,
- (b) reagents and standards procurement and control,
- (c) calibration procedures and frequency,
- (d) analytical procedures,
- (e) document control,
- (f) internal quality control,
- (g) data evaluation and data reduction,
- (h) performance and system audits including accreditation's,
- (i) preventive maintenance,
- (j) routine procedures to assess accuracy, precision, and completeness, and
- (k) out-of-control events and corrective actions.

##### **2.1 Technical Analytical Expertise**

Reference (5) delineates the personnel training and qualification requirements. The Laboratory Qualification Plans (QPs) outline the analysts' training requirements to achieve and demonstrate proficiency for each type of analytical method.

##### **2.2 Effective Information Management Systems**

Reference (5) provides the instruction to ensure proper handling of samples from receipt to the completion of the analytical process. These procedures ensure all associated documentation, including sample analysis requests, are complete and consistent with samples received and the sample integrity is maintained.

### **3. Selecting Testing and Analytical Methods**

3.1 The Shipyard has a number of mixed waste streams with varying physical and chemical properties. Proper selection of laboratory testing and analytical methods is critical to ensure waste designation using compliance testing and analysis is accurate and fulfills regulatory requirements.

3.2 Table A-2 provides a list of the standard analytical methods used by Code 134 to perform compliance testing for various parameters. The list gives the sampling requirements for optimum sample analysis and quality control. Contact Code 134 for information on other test methods available at the Shipyard Laboratory. For cases where the listed requirements are not practical or applicable, contact Code 134 to determine what alternative sampling parameters are allowed. Code 134 is required to concur with any procedure or sampling plan that specifies tests or sampling requirements that deviate from Table A-2.

3.3 If the Shipyard Laboratory cannot perform a required analytical procedure Code 134 will determine if the analytical procedure should be added to their capabilities or accomplished by a contracted off-site laboratory.

3.4 All compliance analyses will have detection limits consistent with regulatory requirements.

# **Puget Sound Naval Shipyard**

## **Inspection Record**

### **Attachment DD**

MIXED WASTE STORAGE FACILITY INSPECTION RECORD							
LOCATION:		<div>SATISFACTORY (S)                      UNSATISFACTORY (U)</div>					
INSPECTION CRITERIA:		DO NOT RECORD "N/A"					
		1	2	3	4	5	6
INSPECTION TYPE: WEEKLY (W) OR LOAD/UNLOAD (L)							
A)	SPILL KITS STAGED						
B)	TWO-WAY COMMUNICATION OPERATIONAL						
C)	SECONDARY CONTAINMENT/FLOOR COATING/BUILDING STRUCTURE: NO CRACKS, LEAKS (ROOF), DAMAGE , OR DETERIORATION. NO SPILLED WASTE ON FLOOR OR IN SUMP.						
D)	FIRE EXTINGUISHERS IN PLACE, INSPECTION TAG CURRENT						
E)	EYEWASH/SHOWER IN PLACE, INSPECTION TAG CURRENT						
F)	EMERGENCY AND WARNING SIGNS POSTED						
G)	CONTAINERS ARE CLOSED, NOT LEAKING, DAMAGED, OR DETERIORATED.						
H)	LABELS ARE VISIBLE FOR INSPECTION, LEGIBLE, AND NOT DAMAGED OR FADED, AND ARE APPROPRIATE FOR THE IDENTIFIED WASTE STREAM						
I)	START DATE IS ENTERED ON HW LABEL/OUT OF SERVICE DATE IS ENTERED ON PCB LABEL						
J)	AISSLE SPACE IS AT LEAST 36 INCHES						
K)	LIGHTING IS FUNCTIONING CORRECTLY						
FACILITY OPERATOR'S NAME		FACILITY OPERATOR'S SIGNATURE			TIME	DATE	
1							
2							
3							
4							
5							
6							
<p>Document all unsatisfactory (U) conditions noted on the reverse of this form and notify Code 105.72.</p>							

MIXED WASTE STORAGE FACILITY INSPECTION RECORD (CONT.)
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FINDINGS	ACTION TAKEN	TIME	DATE
		SIGNATURE	
		SIGNATURE	
		SIGNATURE	
		SIGNATURE	
		SIGNATURE	
		SIGNATURE	
		SIGNATURE	
MWSF Inspection Record (Back)			

# **Puget Sound Naval Shipyard**

## **Training Matrix**

### **Attachment EE**

**Table 8.1 Puget Sound Naval Shipyard Mixed Waste Training Matrix**

Training Course	Job Title / Position Description		
	MWSF Operator	Mixed Waste Supervisor	Nuclear Engineer, Health Physicist, Supervisors
Asbestos Worker	I, C		
Industrial Hazardous Materials	I, C	I, C	I, C
PCB Handler	I		
Lead/Chromate Worker	I, C		
MWSF Operations	I, C	I, C	I, C
Mixed/Radioactive Waste Management Self-Study		I, C	
Other topics depending on assigned duties			I, C

I = Initial training

C = Continuing training

**ATTACHMENT FF**  
**MIXED WASTE STORAGE FACILITY**  
**CLOSURE PLAN**

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Attachment (2) DECONTAMINATION PROCEDURES

## 1. INTRODUCTION - OVERVIEW OF CLOSURE ACTIVITIES

a. The purpose of this facility closure plan is to document the steps to clean close the Mixed Waste Storage Facility (MWSF) located at Puget Sound Naval Shipyard (Shipyard) at the Bremerton Naval Complex. Clean closure will be in accordance with the requirements of 40 CFR Part 264, Subpart G which is invoked by Washington Administrative Code (WAC) 173-303-610 for permitted facilities. This plan has been written using the *Guidance for Clean Closure of Dangerous Waste Facilities*, (Washington State Department of Ecology) Publication #94-111, dated August, 1994.

### b. Background:

(1) Figure 1 shows the location of the MWSF (building 1002) within the Bremerton Naval Complex. The MWSF is within the controlled (access) industrial area (CIA) of Puget Sound Naval Shipyard proper. Figure 2 shows the area within 1000 feet of the MWSF. This area is mainly industrial except for a grassy/brushy unused area along the north edge, and includes no residential areas. The CIA boundary is shown passing to the west of the MWSF. The MWSF has been used to store mixed waste (a mixture of radioactive and chemically dangerous waste) generated as a result of the repair and maintenance of naval nuclear powered vessels. The MWSF is approximately 54 feet by 42 feet in size. Figure 3 (identical to Figure D-1 of section D of the MWSF permit application) provides the interior layout. The building is constructed of concrete masonry unit walls with a concrete floor. The building has been specifically designed for the storage of mixed waste.

(2) The MWSF is designed and operated in a manner which minimizes the potential for contamination of structures, equipment, and surrounding property. The building is designed to prevent the release of dangerous waste from the MWSF to the environment. The MWSF is operated by a dedicated staff trained and qualified in waste operations. During the operation of the MWSF, inspections occur weekly, and repair and replacement of equipment and structures occurs as necessary. Any spills occurring in the MWSF are documented in the MWSF operating log. These measures were intended to ensure the safe operation of the MWSF, thus minimizing the need for site clean-up and decontamination at closure.

(3) For both solid and liquid containerized wastes, no contamination is expected since the wastes are stored in approved storage containers. The majority of waste stored at the MWSF is in the solid form. Solid mixed waste items were verified to contain no free liquid prior to containerization and thus posed a minimal threat of spreading chemical contamination.

c. Overview of Closure Activities: Through the review of MWSF records; visual inspection and verification sampling of the storage area; and decontamination (if necessary), final clean closure requirements will be met in accordance with WAC 173-303-610. All waste containers will be transported to an off-site treatment, storage, and disposal facility. Attachment (1) contains a sampling

and analysis plan. Attachment (2) is a decontamination procedure, to be invoked should the sampling plan detect dangerous constituents that require removal. Areas requiring decontamination will be resampled per Attachment (1) to verify clean closure levels have not been exceeded.

d. Selection of Clean-Up Levels: Clean-up levels specified in Table 3 of Attachment (1) are those derived from the Model Toxic Control Act (MTCA) contained in WAC 173-340. The primary clean-up levels are calculated using MTCA Method B. However, if the constituent is not listed (e.g. lead), the levels of Method A (residential) are used.

Initial confirmatory sampling will be used to determine if there are detectable levels of contaminants. The clean closure requirement for phase one sampling is that all constituents of concern are below practical quantitation limits. If no contaminants are detected during the phase one sampling (as described in Attachment (1)) then the clean closure requirements will be met. If clean closure requirements have not been met after phase one sampling is complete, then phase two sampling will be performed as described in Attachment (1).

The clean closure requirements for phase two and after decontamination (if performed) are determined using the MTCA levels listed in Table 3 of Attachment (1), and the following equations.

Equation 1

$$Risk = \sum_x \left( \frac{conc_x}{MTCA_x^C} \right) (10^{-6})$$

Equation 2

$$Hazard\ Index = \sum_x \left( \frac{conc_x}{MTCA_x^{NC}} \right)$$

Where  $conc_x$  is the highest sample result for a particular constituent (in mg/kg) and the  $MTCA^C$  is the cancer (carcinogenic) MTCA value (where available) and  $MTCA^{NC}$  is the non-cancer MTCA value. These values are listed in Table 3 of Attachment 1. The clean closure requirement is that the *Risk* in Equation 1 must be less than  $1.0 \times 10^{-6}$  and the *Hazard Index* in Equation 2 must be less than one.

## 2. CLOSURE PERFORMANCE STANDARD

a. The closure performance standard as provided in 40 CFR Part 264.111 (as referenced by WAC 173-303-610) states that the owner or operator must close the facility in a manner that:

- Minimizes the need for further maintenance; and
- Controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, postclosure escape of dangerous waste, dangerous constituents, leachate, contaminated run-off, or waste decomposition products to the ground or surface waters or to the atmosphere; and
- Returns the land to the appearance and use of surrounding land areas to the degree possible given the nature of the previous dangerous waste activity.
- Where the closure requirements of this section, or of WAC 173-303-630(10) (container storage areas), WAC 173-303-640(8) (tanks - not applicable to the MWSF), 173-303-650(6) (surface impoundments - not applicable to the MWSF), WAC 173-303-655(6) (land treatment - not applicable to the MWSF), WAC 173-303-660(9) (waste piles - not applicable to the MWSF), WAC 173-303-665(6) (land fills - not applicable to the MWSF), WAC 173-303-670(8) (incinerators - not applicable to the MWSF), WAC 173-303-680(2) through (4) (miscellaneous units - not applicable to the MWSF), or 40 CFR 1102 (incorporated by reference at WAC 173-303-695 (containment buildings - not applicable to the MWSF)) call for the removal or decontamination of dangerous wastes, waste residues, or equipment, bases, liners, soils or other materials containing or contaminated with dangerous wastes or waste residue, then such removal or decontamination must assure that the levels of dangerous waste or dangerous waste constituents or residues do not exceed:
- For soils, ground water or surface water, and air, the numeric cleanup levels calculated using residential exposure assumptions according to the Model Toxics Control Act Regulations, chapter 173-340 WAC as now or hereafter amended. Primarily, these will be numeric cleanup levels calculated according to MTCA Method B, although MTCA method A may be used as appropriate, see WAC 173-340-700 through 173-340-760, excluding WAC 173-340-745; and
- For all structures, equipment, bases, liners, etc., clean closure standards will be set by the department on a case-by-case basis in accordance with the closure performance standards of WAC 173-303-610(2)(a)(ii) and in a manner that minimizes or eliminates post-closure escape of dangerous waste constituents.

b. Through the review of MWSF records; visual inspection and verification sampling of the storage area; and decontamination (if necessary), the final closure standard will be met. Attachments (1) and (2) contain detailed procedures for sampling and analysis and decontamination (if necessary).

### **3. PROCEDURES FOR THE REMOVAL OF WASTES:**

a. Maximum Dangerous Waste Inventory: The maximum permitted capacity of the MWSF is 600 fifty-five gallon drum equivalents. The maximum inventory of dangerous waste ever on-site over the active life of the MWSF is conservatively estimated to be 600 fifty five gallon drum equivalents. Metal boxes have been used for storage of waste at the MWSF. Each box's volume is equivalent to approximately twelve fifty-five gallon drums. A typical waste configuration in the MWSF with interior layout is shown in Figure 3. The MWSF building configuration at maximum capacity is provided in Figures 4 and 5. Figure 6 provides a description of waste streams stored at the MWSF, taken from the PSNS Mixed Waste Site Treatment Plan. Figure 6 is identical to figure B-2 of section B of the MWSF permit application.

b. Waste Containers: All waste containers stored at the MWSF prior to closure operations beginning will be transported to an off-site treatment, storage, and disposal in accordance with the PSNS Mixed Waste Site Treatment Plan.

c. Waste Generated as a Result of Closure Operations: Dangerous waste that could be generated as a result of waste operations includes; debris from decontamination operations, sampling and analysis waste, and personnel protective equipment potentially contaminated with dangerous constituents. Any debris or media generated during closure operations will be evaluated per Attachment (1). Waste designated as a dangerous waste per the WAC 173-303-070 will be managed in accordance with WAC 173-303-200. Wastewater and rinse water generated as a result of closure operations will be managed in accordance with the procedures contained in Attachment (2).

d. Methods of Final Closure: A sampling and analysis plan is contained in Attachment (1). Decontamination procedures are contained in Attachment (2).

(1) The concrete floor: The bermed concrete floor, coated with a special epoxy sealer, has been used as a secondary containment system.

(a) The entire floor will be visually inspected for physical evidence of chemical contamination (e.g., signs of spills; presence of liquid, stains and residues, or large areas of corrosion). The MWSF operating log will be reviewed for any record of spills. Sampling will be performed in those areas showing physical evidence of chemical contamination, or indicated as spill areas in the operating log, and other locations as outlined in Attachment (1). If the phase one

sampling indicates that an area is chemically contaminated, phase two sampling of Attachment (1) will be invoked to quantify the levels of contamination present. Note: The MWSF load/unload area will only be sampled if a review of the MWSF operating log shows a history of spills in the load/unload area. If sampling of the load/unload area is required, the closure plan will be amended to add these sample requirements.

(b) If phase two sampling indicates that contaminants are present above the clean closure levels listed in Table 1 of Attachment (1), the contaminated areas will be decontaminated per Attachment (2). After decontamination, the suspect areas will be sampled in accordance with the phase two sampling and analysis procedures of Attachment (1).

(c) Should the decontamination result in removal of sections of the floor or surface of the floor per Attachment (2), waste generated as a result of these operations will be managed in accordance with paragraph 3.c of this closure plan.

(2) Miscellaneous:

(a) Field Logbook: A field logbook will be used to document the steps taken to achieve clean closure. The field logbook shall be arranged in a format which provides the following information; date, time, description (of action or observation), name and organization (of person entering information), and signature. The typical layout of the logbook entry sheets is as follows:

Date/Time	Description	Name (printed)and organization/ Signature

As a minimum the logbook documents the performance of each step of the closure process including recording detailed sampling information and data and detailed documentation of any decontamination procedures invoked at the MWSF. In addition, the logbook documents any unexpected circumstances encountered during the closure operations. The field logbook is to be maintained by the lead engineer directing the closure operation.

(b) Photographs will be taken of the MWSF prior to, during, and upon completion of each step of closure operations. In addition, any unexpected circumstances or problems encountered during closure operations should be photographed.

(c) Run-on and run-off control is not needed for the MWSF because the MWSF is covered and contained within a roofed building. If decontamination of the load/unload area is

required, the closure plan will be amended to add run-on and run-off control as necessary.

(d) Soil and groundwater will not be monitored as part of closure activities based on operational controls and the design of the MWSF.

#### **4. DECONTAMINATION PROCEDURES**

Decontamination procedures associated with the closure of the MWSF are contained in Attachment (2). These procedures include decontamination of the MWSF's concrete floor and equipment that may become contaminated during closure operations.

#### **5. PROCEDURES FOR SAMPLING AND ANALYSIS**

Procedures for sampling and analysis associated with the closure of the MWSF are contained in Attachment (1). Sampling and analysis procedures will be applied to the concrete floor.

#### **6. SCHEDULE OF CLOSURE**

The schedule for the closure of the MWSF is contained in Figure 6.

#### **7. CERTIFICATION OF CLOSURE**

Closure and decontamination procedures will be monitored by the Shipyard and by an independent, registered professional engineer (PE). The Shipyard will submit a certification of closure to Washington State Department of Ecology, signed by both the Shipyard and the independent PE, within 60 days of completion of final closure. The certification will state that the MWSF was closed in accordance with the approved closure plan.

#### **8. POST-CLOSURE**

The MWSF is a container storage unit only. No disposal units are associated with the MWSF. In addition, no waste will remain at the MWSF after closure. Therefore, according to the post-closure requirements in 40 CFR Part 264.110, no post-closure plans are required for the MWSF.

#### **9. CLOSURE COST ESTIMATES**

a. Per WAC 173-303-620(i)(c), federal facilities are exempt from preparing financial assurance mechanisms.

**Figure 6**  
**SCHEDULE FOR THE FINAL CLOSURE OF THE MWSF**

Item	Activity	Day of Completion <sup>a</sup>	Date <sup>b</sup>	WAC Closure Regulation Applicable
1	Notify Ecology of intended closure.	-60	January 5, 2030	173-303-610(3)(c)(i)
2	Receive final delivery of mixed waste	0	March 5, 2030	NA
3	Transfer existing inventory to an off-site TSD facility	90	June 5, 2030	173-303-610(4)
4	Conduct records review and visual site inspection	90	June 5, 2030	NA
5	Conduct Initial and Detailed Sampling (if required)	120	July 5, 2030	NA
6	Clean, detergent scrub MWSF and flooring surfaces, spill containment basin and sump, and loading area, (if necessary)	150	August 5, 2030	NA
7	Remove, sample and analyze contaminated concrete (if necessary)	150	August 5, 2030	NA
8	Analyze liquid wastes generated during cleaning operations, if done, pending transfer to a TSD facility	180	September 5, 2030	NA
9	Collect, package and ship wastes off-site if necessary. Decontaminate equipment and tools, and transfer waste to a TSD facility, (if necessary)	180	September 5, 2030	NA
10	Conduct final walk-through inspection and prepare letter of certification that closure has been accomplished in accordance with this closure plan. <b>Closure activities complete</b>	180	September 5, 2030	NA
11	Submit closure certification to Ecology	240	November 5, 2030	173-303-610(6)

NOTES:

- a. Prior to (-) or after authorization to proceed
- b. Dates provided assume closure start date of March 5, 2030

## **Attachments to the Closure Plan**

## Attachment FF-1

### **Sampling and Analysis for Clean Closure**

1. **Objectives**: Sampling will be conducted to determine whether decontamination operations are necessary and to verify that clean closure performance standards have been met. Initial sampling during closure of the storage area will be conducted to determine if any contaminants of concern are present in detectable levels (phase one). If contaminants are detected, follow-up sampling will be performed to measure the magnitude and extent of the contamination (phase two). If follow-up sampling identifies contamination levels in excess of the levels specified in Table 3 of this attachment, decontamination will be performed. If decontamination of the area is performed, final sampling (phase two) will be performed to determine the effectiveness of the decontamination and to verify that the clean closure performance standards have been met.

2. **Responsibilities**: The overall administration of this sampling plan will be the responsibility of the Radiological Engineering Division. Actual performance of the sampling will be done by the Environment, Safety and Health Office (air samples) and the Nuclear Facilities and Support Shop (wipe and solid samples). All samples will be analyzed by the Laboratory Division.

3. **Sampling Schedule**: The sampling plan will be performed in one to three phases, depending on the results of actual sampling. Phase one consists of confirmatory wipe and air samples performed within the MWSF. Phase two will direct solid samples for quantification of contaminant levels and to determine effectiveness of any decontamination procedures used. Phase three will be used to sample any wastes generated by decontamination operations to determine their disposition. The following is an overview of each phase.

a. *Phase 1*: Prior to sampling, the floor of the MWSF will be evaluated for chemical contamination. Since all waste is containerized within the MWSF, this phase will consist of confirmatory sampling to verify that the clean closure performance standards have been met. If contaminants are detected, phase two sampling will be implemented. The phase one confirmatory sampling will consist of two types of sampling. Wipe samples will be taken to determine if any applicable metals are present at detectable levels. Air samples adjacent to the surface will be taken to determine if any of the volatile organics of concern are present at detectable levels. All sampling and analysis will be performed using National Institute of Occupational Safety and Health (NIOSH) approved procedures. Any sample result which exceeds the level of detection (LOD) for wipe samples or the minimum measurable level (MML) for air samples will initiate phase two sampling. If all results are less than the LOD or MML (as applicable), the clean closure performance standard (based on

the spill history) will be confirmed and no further sampling will be performed (see Table 1 of this attachment).

b. *Phase 2:* Phase two sampling will be used to quantify contaminants if phase one sampling detects contamination. If any contaminants are found above the phase one LOD, phase two sampling will direct the taking of solid samples from the floor. The samples will be analyzed using the procedures of EPA's publication "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" (SW-846) to determine the concentration of the contaminants within the concrete. If all results are less than the clean closure levels listed in Table 3 of this attachment, then the clean closure performance standards will be met and no further sampling will be performed. The clean closure levels of Table 3 of this attachment are based on the Model Toxics Control Act (MTCA) Method B. The actual levels are from the CLARC II database. If the analysis results show concentrations that exceed the levels in Table 3 of this attachment, the decontamination procedures of this closure plan will be implemented. Following each decontamination procedure, the phase two sampling will be repeated until contaminant levels have been reduced to below the clean closure requirements of Table 3 of this attachment.

c. *Phase 3:* Phase three sampling will only be done if decontamination procedures are performed to clean up detected constituents. Phase three directs sampling and analysis of the wash water and/or debris which may result from decontamination. Phase three sampling is used to determine the appropriate treatment and disposal method for the waste generated during decontamination.

#### 4. Selection of Sample Types and Amounts:

a. *Phase 1:* Sampling during phase one will consist of surface wipes and air samples using a solid sorbent tube. All waste stored in the MWSF is containerized. This leads to the conclusion that no residual contamination is present in the MWSF. Phase one confirmatory sampling will use NIOSH developed procedures to sample for the presence of any of the contaminants of Table 1 of this attachment above the LOD or MML (as applicable).

(1). Metals: Sampling for the presence of dangerous metals is based on the assumption that a spread of waste containing metal contamination will leave metal residues on the concrete surface. Wipe samples from an area of 100 cm<sup>2</sup> will be taken at the sample locations and analyzed for the presence of the metals listed in Table 1 of this attachment. To verify the validity of this wipe sample, the case of one gram of lead regulated solid waste spilled over 100 cm<sup>2</sup> can be evaluated. If this waste contained 100 ppm lead, which is the lowest level which could result in RCRA regulation, one gram of waste would contain 100 µg of lead. If a wipe pick-up efficiency of only 20% is assumed, this would

result in a wipe lead content of 20 µg, which is 10 times the LOD for this test. The purpose of the wipe samples is to qualify the presence of the metals above clean closure levels, not to quantify the concentrations in the floor.

(2). Volatile Organics: No wipe sampling technique exists for volatile organics since the constituents will not remain on the surface exposed to air for any length of time and the friction of wiping would dissipate any volatiles which may be present. For the purpose of qualifying the presence of volatile organics above clean closure levels, the presence of the constituents in the air near the surface of the floor will be evaluated. In the case of a spill of waste containing volatile organics, the volatile contaminants on or very near the surface of the floor will volatilize quickly. However, a percentage of the organic contaminant may penetrate below the surface of the floor and remain for a longer period of time. These volatile constituents will slowly migrate to the surface and volatilize due to the partial pressure gradients for the constituents. Over time, this will result in a slowly changing quasi-equilibrium between volatile organic concentrations in the floor and in the air at the surface. In still air, the air along the surface of the floor will contain a level of any volatile organics which may be present under the surface of the floor. NIOSH procedures developed to detect very small concentrations of the organic constituents listed in Table 1 of this attachment will be used to determine if any of these volatile organics are present at detectable levels. All of these procedures draw air through a solid sorbent tube which collects the organic constituent being sampled for. Air sample sizes will be as listed in Table 1 of this attachment. These sample volumes are based on the maximum sample size for the procedure, or the maximum air flow allowed by the method for a fifteen minute sample. This will optimize the time spent sampling as well as providing an adequate MML. All samples will be drawn from the air within six inches of the floor surface.

b. *Phase 2*: Phase two quantification sampling will consist of grab samples taken of the floor at designated locations. A concrete coring tool will be used to collect samples of the floor to a depth of approximately 1.5 inches. From this core, ten grams of material will be used for total metals analysis and another ten grams will be used to analyze for volatile organics. The quantities and methods are based on EPA's SW-846 procedures, as listed in Table 3 of this attachment.

c. *Phase 3*: Phase three sampling will use solid and/or liquid samples to determine the concentrations of dangerous constituents in decontamination waste to determine proper management. Waste water from water wash decontamination will be sampled using grab liquid samples taken from the collection bottles. Each sample location will

include two 40 ml samples to be analyzed for volatile organics and one 500 ml sample to be analyzed for total metals. Debris resulting from concrete removal will be grab sampled from the roll-off box. Each sample location will include one 10 gram sample to be analyzed for volatile organics and one 110 gram sample to be analyzed for TCLP metals.

5. **Selection of Sampling Locations:**

a. *Phase 1:* Confirmatory sampling of the MWSF will consist of area-wide random grid sampling and focused sampling of suspect areas. The area within the MWSF is gridded, using four foot grid, spacing into 131 nodes. A total of 25 sampling nodes were randomly selected plus the MWSF sump, for a total of 26 sampling nodes. Within the sampling nodes, the wipe samples will be taken at the center of the node. Air samples in a node location will be taken by moving the sampler tube over the entire node area. The entire floor will also be visually inspected for signs of spills and stains. All suspect areas found during the visual inspection will be recorded (described and located) in the field log book. Photographs will also be taken of the suspect areas. These suspect areas will be sampled in addition to the random grid samples.

b. *Phase 2:* Quantification sampling in the MWSF will consist of area-wide random grid sampling and focused sampling of suspect areas. The area within the MWSF is gridded using a four foot grid spacing into 131 nodes. A total of 25 sampling nodes were randomly selected. Within the sampling nodes, the core samples will be taken at the center of the node. In addition to the random sampling locations, any nodes with detected contaminants found during phase one sampling will be sampled as well as the suspect areas found during the phase one visual inspection.

c. *Phase 3:* Decontamination waste will be sampled based on its physical form. Waste water from washing will be sampled by taking one sample from each collection bottle near the mid-depth. Concrete debris will be sampled using four samples from each roll-off box. The samples from the roll-off boxes will be taken near the center of each side if the box is full, or evenly spaced about the debris if the box is partially full.

6. **Sampling Procedure**

a. *Phase 1:*

(1) Sampling locations: The floor shall be marked with a grid pattern consisting of four foot grid sizing (see Figure 1-A). The last row and column will be somewhat larger due to the MWSF dimensions not being evenly divisible by four. The grid may be marked using tape, string, or markers approved by C/105.2A. Do not use markers, paint, or other materials with solvents or metal

particulates which may contaminate sample results. Number the first row nodes one through ten and the first column nodes with the letters A-M. The entire floor surface shall then be inspected for signs of spills and staining to determine suspect areas. Record the results of the visual inspection along with the grid location and description of any suspect area in the field log book. Table 2 of this attachment lists the location of each random sampling node to be used for the MWSF. Each suspect area and the sump will be sampled in addition to the random nodes. The point within a node to be sampled is in the center of the node or suspect areas. Photographs will be taken of the gridded floor and any suspect areas.

(2) Sample labeling and chain of custody: Samples shall be placed in sealed containers and labeled with an identification label and security seal in accordance with the Shipyard MWMP. A Sample Analysis Report (SAR) or equivalent document shall be completed after each sample is taken to establish the chain-of-custody documentation. In addition to this, all samples taken will be logged into the field log book.

(3) Installation of sampling devices: A template is used to take the wipe samples for metals analysis. The template has a 10 cm by 10 cm opening in the center. The template will be placed such that the opening is near the center of the node. When sampling suspect areas, the template shall be centered over the suspect area. Air samples for volatile organics shall be taken using a sampling pump connected to a sampler sorbent tube by flexible tubing. A new sorbent tube will be used for each sample. The sorbent tube shall be attached to a rigid rod to allow sampling the sample area without requiring personnel to physically enter the sample area. This is to minimize air disturbance during sampling, which could affect sample results.

(4) Procedures for sample collection and handling: Collect a wipe and air sample at each node specified in Table 2 of this attachment and at any suspect areas identified in the field log book. Collection of wipe samples shall be in accordance with NIOSH Procedure 9100. Following installation of the sampling template, a sampling pad will be used to wipe the area within the template. The surface shall be wiped in both dimensions as specified in the NIOSH procedure. The pad shall be folded with the exposed side in and placed in a new sealable container. The container shall be sealed, and labeled as described above. Each sample will be taken using a new pair of disposable latex gloves. Air samples shall be taken using the applicable NIOSH procedure as listed in Table 1 of this attachment. Break the ends of the sampler sorbent tube immediately before sampling. Attach the sampler sorbent tube to the sampling pump using the flexible tubing. Sample the air just above the floor at an accurately known flow rate as specified in the applicable NIOSH procedure until the total sample size is reached as specified in Table 1 of this attachment. During the sampling, slowly move the sampler sorbent tube over the entire area within the sample node,

keeping the sampler sorbent tube within six inches of the floor at all times. During sampling, minimize activities which may cause air disturbances in the sample area. Do not walk in the sample area during sampling. Use a rigid rod attached to the sampler sorbent tube to move the sampler over the area. Following sample collection, cap both ends of the sampler sorbent tube and place in a new bag. Seal and label the bag. Repeat procedure for each volatile constituent that requires a different type or size of sorbent tube.

(5) Personnel and equipment decontamination: Decontamination of personnel is not necessary due to the use of disposable gloves and disposable templates for wipe samples. The only equipment which will be reused is the pump and the flexible tubing. Since the pump and tubing are down stream of the sampler sorbent tube, no decontamination is necessary for these items.

(6) Management of sampling waste: All waste generated by sampling (e.g. gloves, templates, and decontamination materials) which show visual indications of potential contamination shall be collected in a sealable plastic bag or metal drum. The sampling waste shall be kept in an dangerous waste satellite accumulation area pending receipt of the sample results. If any of the wipe samples analyzed are found to contain hazardous constituents, the sampling waste shall be managed as a dangerous waste. If all sample results from the floor sampling are negative for hazardous constituents, then the sampling waste shall be disposed of as solid waste.

(7) Quality assurance and quality control (QA/QC) samples: The following QA/QC samples shall be used or taken: trip blanks, field blanks, and field duplicates. All QA/QC samples shall be marked with the appropriate description and location and recorded in the field log book.

(a) *Wipe sample QA/QC*: A wipe sample trip blank (also known as a transportation blank) shall be prepared by sealing a moistened sample pad in a bag prior to the sample materials arrival at the MWSF. All materials used for the trip blank shall be from the same source as those used in the field. The trip blank shall accompany the sample materials to the MWSF, and be returned with the completed samples to the laboratory. One wipe sample field blank shall be taken during the phase one sampling following sampling of the fifth node. The field blank shall be taken by preparing a pad for sampling, then bag the sample pad without wiping any surfaces. One wipe sample equipment blank shall be taken following sampling of the twelfth node. A wipe sample field duplicate shall be taken during sampling of the twentieth node. The field duplicate shall be prepared by moving the template 10 cm from the sample location and repeating the sampling procedure.

(b) *Air sample QA/QC*: An air sample trip blank shall be prepared by sealing an unopened sampler sorbent tube in a bag prior to the sample materials arrival at the MWSF. All materials used for

the trip blank shall be from the same source as those used in the field. The trip blank shall accompany the sample materials to the MWSF, and be returned with the completed samples to the laboratory. Two air sample field background samples shall be taken within the MWSF following sampling of the fifth and eighteenth nodes. The field background samples shall be taken by taking an air sample over the applicable node, but at a height of approximately ten feet. No air sample equipment blank will be taken since no decontaminated equipment is used. An air sample field duplicate shall be taken after sampling of the eighth node. The field duplicate shall be prepared by repeating the sampling procedure on the eighth node.

(8) Splitting samples: This sampling procedure does not provide samples which can be split.

(9) Confirmation sampling: If any sampling results indicate contaminants listed in Table 1 of this attachment are present, the phase two sampling procedures shall be implemented to quantify the contamination present.

b. *Phase 2:*

(1) Sampling locations: The floor shall be marked with a grid pattern consisting of four foot grid sizing (see Figure 1-A). The last row and column will be somewhat larger due to the size not being evenly divisible by four. The grid may be marked using tape, string, or markers approved by C/105.2A. Do not use markers, paint, or other materials with solvents or metal particulates which may contaminate sample results. Number the first row nodes one through ten and the first column nodes with the letters A-M. Table 4 of this attachment lists the location of each random sampling node to be used for the MWSF quantification sampling. The point within the node to be sampled is the center of the node. Any suspect areas identified during the phase one visual inspection and any nodes which had sample results above LOD or MML shall also be sampled. Sampling after decontamination shall use the nodes listed in Table 4 of this attachment and any prior phase two sample locations which detected contaminants above the clean closure levels.

(2) Sample labeling and chain of custody: Samples shall be placed in sealed bottles and labeled with an identification label and security seal in accordance with the Shipyard MWMP. A Sample Analysis Report (SAR) or equivalent document shall be completed after each sample is taken to establish the chain of custody documentation. In addition to this, all samples taken will be logged into the field log book.

(3) Installation of sampling devices: The sampling device will be a concrete coring saw (1.5-2.5 inch diameter) attached to a drill. Installation consists of attaching the saw securely to the drill.

(4) Procedures for sample collection and handling: Collect a concrete core sample at each node specified in Table 4 of this attachment and at any suspect areas identified in the field log book. Wear a new pair of disposable latex gloves for all samples. Using the drill and core saw, bore into the concrete floor to a depth of approximately two inches. Remove the core saw. If the core is in the saw, use the chisel to dislodge the sample onto a disposable surface and separate the core into two samples of at least ten grams each. If the core does not remain in the core saw, use the steel chisel to remove the core and split into two samples of at least ten grams each. Place one sample (use large chunks only) into a 120 ml amber coated bottle for volatile organics analysis. Place the second sample in a 500 ml plastic bottle for total metals analysis. Seal each bottle and label as describe above. Place the volatile organics sample in a cooler with ice packs immediately after sampling. Personnel performing or observing sampling operations shall wear safety glasses, respirators and protective clothing.

(5) Personnel and equipment decontamination: Decontamination of personnel is not necessary due to the use of disposable gloves for sampling. The equipment which may be reused are the concrete core saw, the drill and a steel chisel. To decontaminate the concrete core saw and/or chisel, submerge the tool in clean container containing soap (any kind is acceptable) and water. The cleaning water should be very soapy before use. Use a wire or bristle brush to thoroughly clean all surfaces of the tool. Rinse the tool with de-ionized water. Catch rinse water in a collection bucket. Visually inspect the tool. If any residue remains on the tool, repeat the above procedure until no residue is observed. Next, submerge the tool in a solution of 5% nitric acid. Use a clean plastic bucket to contain the acid. Immediately remove tool and rinse with de-ionized water. The drill does not contact the sample and does not require decontamination.

(6) Management of sampling waste: All solid waste generated by sampling (e.g. gloves and cloths) which show visual indications of potential contamination shall be collected in a sealable plastic bag or metal drum. The sampling waste shall be kept in an dangerous waste satellite accumulation area pending receipt of the sample results. If any of the concrete samples analyzed are found to contain hazardous constituents above regulatory levels, the sampling waste shall be managed as dangerous waste. If all sample results from the floor sampling are negative for hazardous constituents, then the sampling waste shall be disposed of as solid waste. Liquid wastes generated as a result of cleaning tools shall be segregated between acid waste and non-acid waste. Dispose of the acid waste in accordance with the Shipyard hazardous waste management plan as dangerous waste. Non-acid liquid waste will be managed similarly to the solid waste as described above.

(7) Quality assurance and quality control (QA/QC) samples: The following QA/QC samples shall be used or taken: trip blanks, field blanks, equipment blanks and field duplicates. All QA/QC samples shall be marked with the appropriate description and location and recorded in the field log book. A trip blank (also known as a transportation blank) shall be prepared by filling one 500 ml plastic bottle and two 40 ml bottles with de-ionized water prior to sample materials arrival at the MWSF. All materials used for the trip blank shall be from the same source as those used in the field. The trip blank shall accompany the sample materials to the MWSF, and be returned with the completed samples to the laboratory. One field blank shall be taken following sampling of the fifth node. The field blank shall be taken by filling one 500 ml plastic bottle and two 40 ml bottles with de-ionized water within the MWSF. One equipment blank shall be taken following sampling of the twelfth node. The equipment blank shall be prepared by pouring de-ionized water over the decontaminated core saw into a 500 ml bottle and two 40 ml bottles immediately following decontamination of the saw. A field duplicate shall be taken during sampling of the eighth node. The field duplicate shall be prepared by separating the core into four samples (minimum 10 grams) instead of two.

(8) Splitting samples: If requested by Ecology in advance, any sample can be split for analysis by Ecology.

(9) Confirmation sampling: If any sampling results indicate contaminants are above the clean closure performance standards of Table 3 of this attachment, the decontamination procedures of this closure plan shall be implemented. Following decontamination, this phase three sampling plan shall be used to determine if the clean closure performance standards have been met. Sample locations used following decontamination will be the applicable post-decontamination sampling nodes in Table 4 of this attachment.

c. *Phase 3:*

(1) Sampling locations: Phase three sampling will use solid and/or liquid samples to determine the concentrations of dangerous constituents in decontamination waste to determine proper management. Waste water from water wash decontamination will be sampled using grab liquid samples taken from each collection bottle. Debris resulting from concrete removal will be grab sampled using four samples from each roll-off box. The samples from the roll-off boxes will be taken near the center of each side if the box is full, or evenly spaced about the debris if the box is partially full. The location of each sample will be recorded in the field log book.

(2) Sample labeling and chain of custody: Samples shall be placed in sealed bottles and labeled with an identification label and security seal in accordance with the Shipyard MMMP. A Sample Analysis Report (SAR) or equivalent document shall be completed after

each sample is taken to establish the chain of custody documentation. In addition to this, all samples taken will be logged into the field log book.

(3) Installation of sampling devices: The sampling devices will be a pump connected to flexible tubing for liquid sampling and a steel scoop for sampling the debris.

(4) Procedures for sample collection and handling: Collect a liquid sample from each bottle of decontamination waste water at a depth of one half of the level below surface. Collect the samples using a suction pump connected to a sampling container with flexible tubing. The sampling container shall be located upstream from the pump such that liquid is drawn into the sampling hose into the sampling container. Use a new sampling container and new sampling tube for each sampling event. Pour samples from the sampling container into two 40 ml glass bottles for organics analysis and a one liter plastic bottle for metals analysis. The wastewater samples shall be evaluated using the Clean Water Act (CWA) and SW-846 methods listed in Table 5 of this attachment. Using a steel scoop, sample the concrete debris at the locations described above. Place a minimum of ten grams of material each in a 120 ml glass bottle for organics analysis and a 500 ml plastic bottle for metals analysis. Seal and label the bottles and place the organics samples in a cooler with ice packs immediately after sampling. The debris samples shall be evaluated using the methods listed in Table 5 of this attachment. Wear a new pair of disposable latex gloves for all samples. Waste disposition shall be in accordance with the decontamination procedure of Attachment 2.

(5) Personnel and equipment decontamination: Decontamination of personnel is not necessary due to the use of disposable gloves for sampling. The equipment which may be reused are the pump, pump tubing and metal scoop. Since the pump and tubing are down stream of the sampler sorbent tube, no decontamination is necessary for these items. To decontaminate the metal scoop, submerge the scoop in clean container containing soap (any kind is acceptable) and water. The cleaning water should be very soapy before use. Use a wire or bristle brush to thoroughly clean all surfaces of the tool. Rinse the tool with de-ionized water. Catch rinse water in a collection bucket. Visually inspect the tool. If any residue remains on the tool, repeat the above procedure until no residue is observed. Next, submerge the tool in a solution of 5% nitric acid. Use a clean plastic bucket to contain the acid. Immediately remove tool and rinse with de-ionized water.

(6) Management of sampling waste: All solid waste generated by sampling (e.g. gloves and cloths) which shows visual indications of potential contamination shall be collected in a sealable plastic bag or metal drum. The sampling waste shall be kept in an dangerous waste satellite accumulation area pending receipt of the sample

results. If any of the liquid or debris samples analyzed are found to contain hazardous constituents above regulatory levels, the sampling waste shall be managed as dangerous waste. If all sample results are negative for hazardous constituents, then the sampling waste shall be disposed of as solid waste. Liquid wastes will be managed similarly to the solid waste as described above.

(7) Quality assurance and quality control (QA/QC) samples: The following QA/QC samples shall be used or taken for phase three: trip blanks and equipment blanks. All QA/QC samples shall be marked with the appropriate description and location and recorded in the field log book. A trip blank (also known as a transportation blank) shall be prepared by filling a one liter plastic bottle and two 40 ml bottles with de-ionized water prior to the sample materials arrival at the MWSF. All materials used for the trip blank shall be from the same source as those used in the field. The trip blank shall accompany the sample materials to the MWSF, and be returned with the completed samples to the laboratory. One equipment blank shall be taken following sampling of the decontamination waste water and the concrete debris. The equipment blanks shall be prepared by drawing de-ionized water up a new tube into a new sample bottle and filling a 500 ml bottle and two 40 ml bottles and by pouring de-ionized water over the scoop into a 500 ml bottle and two 40 ml bottles. A field duplicate shall be taken during sampling of the tenth node.

(8) Splitting samples: If requested by Ecology in advance, any sample can be split for analysis by Ecology.

(9) Confirmation sampling: Not applicable.

7. Analysis of samples and reporting of results:

a. Selection of the laboratory: All samples will be analyzed by the PSNS Chemistry Laboratory. The PSNS Analytical lab is accredited by the State of Washington under WAC 173-50 (LAN number F001) and by the American Association of Laboratory Accreditation.

b. Identification of sampling and analysis parameters: Two parameters are of interest, total metals and volatile organics. The following chemical constituents will be evaluated by sampling and analysis: lead; chromium; cadmium; barium; copper; selenium; acetone; methanol; methyl ethyl ketone; methylene chloride (dichloromethane); toluene; and n-butyl alcohol (butanol-n). The selection of these parameters is based on the regulated constituents of all the waste stored in the MWSF over it's active life.

c. Properties of waste: Wastes to be sampled are those that may result from decontamination. These consist of two types, waste water from washing the floor and/or equipment and concrete debris from surface removal.

d. Analytical techniques and procedures: Phase one sampling will use the NIOSH procedures listed in Table 1 of this attachment. Phase two and three sampling will use SW-846 methods as listed in Table 3 of this attachment.

e. Detection or quantitation limits: The detection limits for phase one sampling are given in Table 1 of this attachment. The practical quantitation levels for phase two and three sampling are listed in Tables 3 and 5 of this attachment.

f. Laboratory QA/QC: All laboratory QA/QC will be in accordance with the PSNS Laboratory Division Quality Control Manual. For Phase 1 Volatile Organics, one set of desorption efficiency samples and one set of media blanks shall be analyzed for each analyte and each lot of sampling tubes.

g. Data reporting: All data and analysis reports will be reviewed and signed by the PSNS Laboratory Division. Copies of all reports will be sent to the Radioactive Engineering Division for inclusion in the field log book and final closure certification report and the Shipyard history files.

**Table 1**  
**Phase one Sampling Parameters**

Constituent	Sample Method	NIOSH Method	LOD/MML
Lead	Wipe	9100	2 µg /100 cm <sup>2</sup>
Chromium	Wipe	9100	2 µg /100 cm <sup>2</sup>
Cadmium	Wipe	9100	2 µg /100 cm <sup>2</sup>
Barium	Wipe	9100	2 µg /100 cm <sup>2</sup>
Copper	Wipe	9100	2 µg /100 cm <sup>2</sup>
Mercury	Wipe (dedicated)	9100	2 µg /100 cm <sup>2</sup>
Silver	Wipe	9100	2 µg /100 cm <sup>2</sup>
Acetone	Air (3L)	1300	9 ppm
Methanol	Air (3L)	2000	25 ppm
Methyl Ethyl Ketone	Air (3L)	2500	17 ppm
Methylene Chloride	Air (2.5L)	1005	4 ppm
Toluene	Air (3L)	1500	100 ppm
n-Butyl Alcohol	Air (3L)	1401	165 ppm

**Table 2**  
**MWSF Phase One Random Sample Nodes**

#	NODE
1	A-2
2	A-6
3	A-7
4	B-7
5	C-4
6	C-10
7	E-2
8	F-1
9	G-1
10	G-3
11	G-7
12	G-9
13	H-1
14	H-3
15	H-4
16	I-1
17	I-9
18	J-5
19	J-9
20	J-10
21	L-1
22	L-5
23	L-7
24	M-4
25	M-10
26	SUMP

**Table 3**  
**Phase Two Clean Closure Requirements**

Constituent	Clean Closure Level (d)	SW-846 Method	Required PQL(f)	Known Toxic Effects [Hazard Quotient](d)
Lead (CAS 7439-92-1)	250 mg/kg (a)	3050A 6010	20 mg/kg	neurotoxicity
Chromium (CAS 18540-29-9)	400 mg/kg (b)	3050A 6010	20 mg/kg	None Listed
Cadmium (CAS 7440-43-9a)	80 mg/kg	3050A 6010	20 mg/kg	None Listed
Barium (CAS 7440-39-3)	$5.6 \times 10^3$ mg/kg	3050A 6010	20 mg/kg	cardiovascular toxicity
Copper (CAS 7440-50-8)	$2.96 \times 10^3$ mg/kg	3050A 6010	20 mg/kg	gastrointestinal toxicity
Selenium (CAS 7782-49-2)	$4.0 \times 10^2$ mg/kg	3050A 6010	20 mg/kg	Clinical Selenosis
Acetone (CAS 67-64-1)	$8.0 \times 10^3$ mg/kg	8260B	250 mg/kg	nephrotoxicity, hepatotoxicity
Mercury (CAS 7439-97-6)	24 mg/kg	7471	0.2 mg/kg	Neurotoxicity, nephrotoxicity
Silver (CAS 7440-22-4)	400 mg/kg	3050A 6010	20 mg/kg	skin
Methanol (CAS 67-56-1)	$4.0 \times 10^4$ mg/kg	NIOSH 2000 (e)	500 mg/kg	hemotoxicity, neurotoxicity
Methyl Ethyl Ketone (2-Butanone) (CAS 78-93-3)	$4.8 \times 10^4$ mg/kg	8260B	250 mg/kg	developmental toxicity
Methylene Chloride (Dichloromethane) (CAS 75-09-2)	133 mg/kg (c) $4.80 \times 10^3$ mg/kg	8260B	10 mg/kg	hepatotoxicity
Toluene (CAS 108-88-3)	$1.6 \times 10^4$ mg/kg	8260B	250 mg/kg	Hepatotoxicity, nephrotoxicity
n-Butyl Alcohol (butanol-n) (CAS 71-36-3)	$8.0 \times 10^3$ mg/kg	8260B	250 mg/kg	hemotoxicity

- Notes:
- (a) Based on MICA Method A value
  - (b) Hexavalent chromium level
  - (c) Carcinogenic (cancer) clean closure level
  - (d) Based on Ecology's CLARC II (Feb 96) cleanup level database
  - (e) An SW-846 procedure cannot be directly applied to methanol, therefore a modification of NIOSH Procedure 2000 will be used.
  - (f) Practical Quantitative Limit for laboratory analysis use

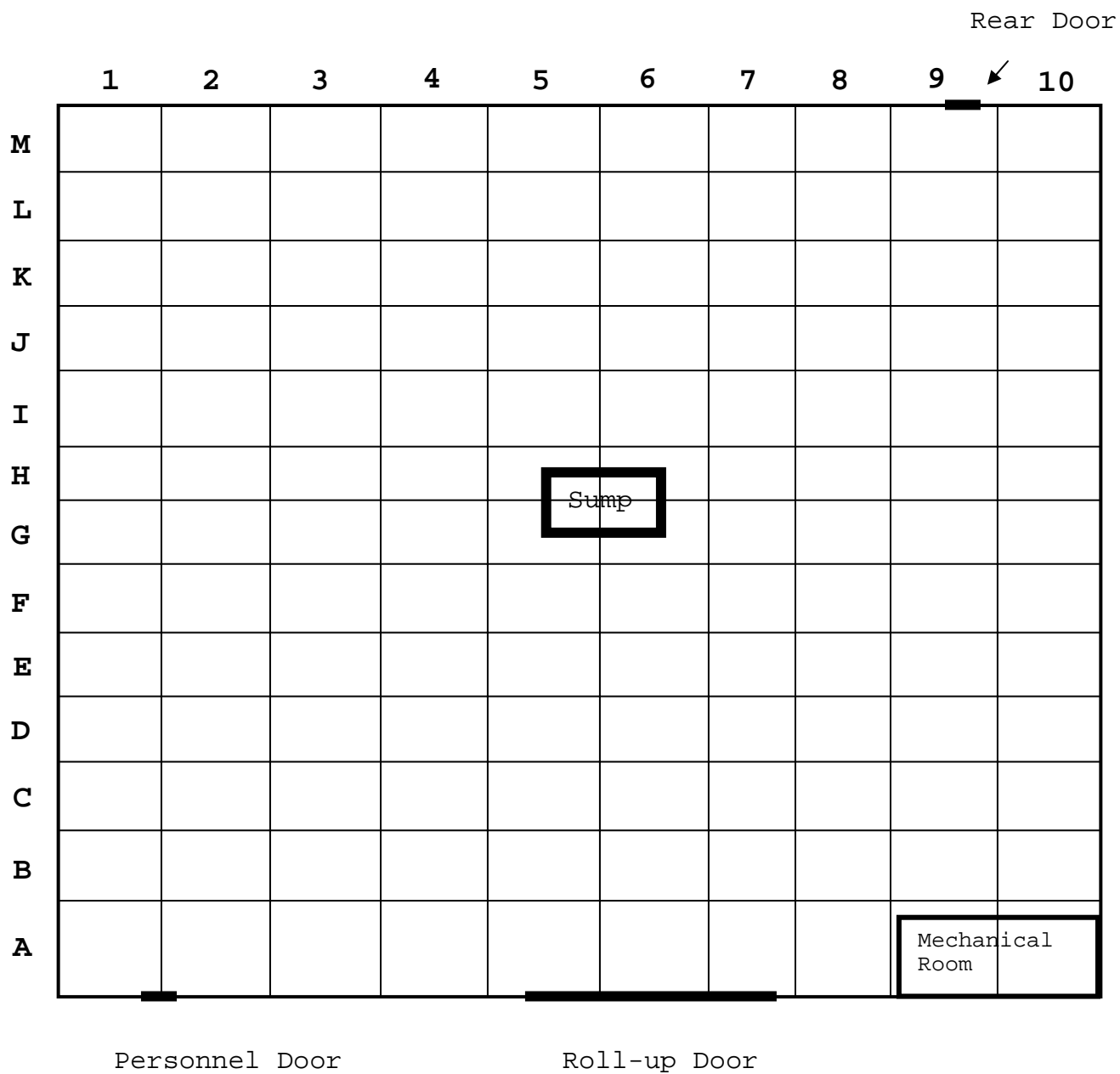
**Table 4**  
**MWSF Phase Two & Three Random Sample Nodes**

#	Quantification Sample Nodes	After Wash Decontamination	After Concrete Removal
1	A-1	A-4	A-1
2	A-2	B-2	A-7
3	A-7	B-5	B-1
4	B-4	B-7	B-3
5	C-5	C-1	B-4
6	C-6	C-4	B-6
7	D-1	D-6	C-1
8	D-9	D-8	C-7
9	D-10	E-2	D-2
10	E-2	E-5	D-8
11	F-1	E-10	E-6
12	F-8	F-2	E-8
13	G-8	F-3	E-10
14	G-9	F-8	F-1
15	H-5	G-8	F-10
16	I-2	G-9	G-2
17	I-6	H-5	I-4
18	I-10	H-8	I-5
19	J-1	I-5	J-3
20	J-7	I-10	K-1
21	J-8	J-4	L-1
22	K-1	J-6	L-4
23	M-2	K-8	L-6
24	M-6	L-8	L-7
25	M-8	M-2	M-9

**Table 5**  
**Phase Three Debris and Waste Water Sample Requirements**

Constituent	Debris (SW-846 Method)	Waste Water		PQL	
		SW-846	CWA Method	SW-846	CWA
Lead	1311, 3015B, 6010	3010A, 6010	200.7	5 mg/L	0.2 mg/L
Chromium	1311, 3015B, 6010	3010A, 6010	200.7	5 mg/L	0.1 mg/L
Cadmium	1311, 3015B, 6010	3010A, 6010	200.7	1 mg/L	0.1 mg/L
Barium	1311, 3015B, 6010	3010A, 6010	200.7	100 mg/L	0.1 mg/L
Copper	NA	NA	200.7	NA	0.1 mg/L
Acetone	NA	NA	NA	NA	NA
Methanol	NA	NA	NA	NA	NA
Methyl Ethyl Ketone (2-Butanone)	1311, 8260B	8260B	NA	100 mg/L	NA
Methylene Chloride	NA	NA	624	NA	5 mg/L
Toluene	NA	NA	624	NA	5 mg/L
n-Butyl Alcohol (butanol-n)	NA	NA	NA	NA	NA
Oil & Grease	NA	NA	413.1	NA	5 mg/L
PCB's	NA	NA	608	NA	1 µg/L
Selenium	1311, 3015B, 6010	3010A, 6010	200.7	1 mg/L	0.2 mg/L
Mercury	1311, 7470	7470	245.1	0.2 mg/L	0.1 mg/L
Silver	1311, 3015B, 6010	7760	200.7	5 mg/L	0.1 mg/L
PH	9045	9040	150.1	NA	NA

**Figure 1-1**  
MWSF Floor Sampling Grid



not to scale

## Attachment FF-2

### **Decontamination Process Section of the Clean Closure Verification for the Building 1002 Mixed Waste Storage Facility (MWSF)**

1. This attachment contains the processes for decontamination and subsequent removal and disposal of dangerous wastes (decontamination residuals) generated during the decontamination of the MWSF. The residuals generated as a result of the decontamination may be either liquids from cleaning surfaces or concrete from physical removal. All residuals, generated as a result of this process, will be contained temporarily at the decontamination site until sampled for dangerous constituents to determine the best method for processing. After evaluating the results of the sampling plan, the decontamination residuals will be assigned applicable dangerous waste codes. Waste designation procedures and disposal determination for concrete surfaces associated with the decontamination will be based on the dangerous constituents stored in the MWSF. The MWSF is operated in a manner that minimizes the potential for contamination of structures, floor surfaces and the surrounding area. This minimization is accomplished by established spill prevention measures such as allowing only specifically trained personnel access to the MWSF and inspection of the MWSF both when occupied and weekly. These prevention measures are intended to provide for safe MWSF operation and to minimize the need for site clean up and decontamination. Due to the manner in which the MWSF is operated, the actual implementation of the following decontamination procedure is considered remote. However, if decontamination is required it is anticipated only the surface of the floor will require decontamination. Samples collected will be analyzed to verify if the surface was contaminated and subsequently to verify decontamination is completed. Decontamination will be considered complete when laboratory results meet the standards identified in Attachment (1) of the MWSF Closure Plan.

(1) Decontamination of the MWSF will be based on sampling results and visual inspection of surfaces: For this closure plan, decontamination, if required, will be based on the results of the sampling plan. All information relative to the decontamination will be entered into the MWSF field log book. The floor

surface and any cleaning equipment will be initially cleaned per 40CFR 268.45 Table 1 -- *Alternative Treatment Standards For Hazardous Debris* using the treatment and technology for Water Washing and Spraying. The structure will be considered acceptable for reuse/disposal without further treatment when the following performance standard criteria is met:

"Clean debris surface" means the surface, when viewed without magnification, shall be free of all visible contaminated soil and dangerous waste except that residual staining from soil and waste consisting of light shadows, slight streaks, or minor discolorations, and soil and waste in cracks, crevices, and pits may be present provided that such staining and waste and soil in cracks, crevices, and pits shall be limited to no more than 5% of each square inch of surface area.

(2) Surface Cleaning and Surface Removal:  
Decontamination will be based on the above sampling results. *Note: miscellaneous MWSF equipment, if contaminated, may be cleaned with damp sponges*

a. Mapping of Contaminated Surfaces of the MWSF:  
Prior to cleaning of the surface and immediate adjacent area to the surface, the MWSF will be photographed and visually inspected for cracks and other openings through which the decontamination wash could be released to the environment. Cracks or openings will be sealed and the location of the these sealed locations annotated on a map of the area. The map will show the location and dimension of each sealed location. These maps and the photo essay will be placed in the record of closure. After decontamination all cracks and crevices will be visually inspected again to determine if the release of dangerous waste or constituents may have occurred. The results of this investigation will be placed in the field log book.

b. Abrasive Water Blasting: One method for cleaning the MWSF is abrasive water blasting. Trisodium Phosphate solutions (to facilitate processing of the decontamination residuals at the Industrial Wastewater Pretreatment Facility (IWPF)) may be applied to the MWSF surface prior to Abrasive water blasting to facilitate contaminant removal. Decontamination residuals will be collected with wet/dry vacuum cleaners or sponges and transferred to 15 gallon plastic containers for characterization per Attachment (1) of the MWSF Closure Plan and subsequent disposal. Surfaces

shall then be rinsed a minimum of three times. The resulting decontamination residuals will be collected with wet/dry vacuum cleaners or sponges and transferred to 15 gallon plastic collection containers for characterization per Attachment (1) of the MWSF Closure Plan and subsequent disposal. After sampling, this procedure may be repeated until no longer cost effective. Results of each decontamination will be entered into the field log book. Further decontamination, if necessary, will be accomplished using the physical extraction technologies for hazardous concrete debris in accordance with 40CFR 268.45.

c. Alternative Manual Cleaning: Instead of Abrasive water blasting, surfaces of the MWSF that show contamination above limits may be manually decontaminated with Trisodium Phosphate solutions. All areas will be cleaned with brooms or brushes and then be rinsed and flushed a minimum of three times. The decontamination residuals will be collected with wet/dry vacuum cleaners or sponges and transferred to 15 gallon plastic containers for characterization per Attachment (1) of the MWSF Closure Plan and subsequent disposal. After sampling, this procedure may be repeated until no longer cost effective. Results of each decontamination will be entered into the field log book. Further decontamination will be accomplished using the physical extraction technologies for hazardous concrete debris in accordance with 40CFR 268.45, as follows.

d. Removal of Concrete Surface of the MWSF: Removal of the concrete surface to facilitate decontamination may be necessary if surface cleaning is not effective. The hazardous debris performance standards for physical extraction are based initially on removal of the layer of contaminated debris. Per 40 CFR 268.45 Table 1 the performance standard for concrete removal requires the removal of 0.6cm of surface layer. To meet this standard the surface layer will be removed using mechanical equipment such as striking piston heads, saws or rotary grinding wheels. The concrete surface will then be examined to meet the requirement for "clean debris surface". Results of this decontamination process will be entered into the log book.

2. **Clean Debris:** When the concrete containment areas meet the clean debris surface requirements, the facility will be considered clean. However, if clean closure still cannot be accomplished using the above physical extraction technologies, bulk concrete sections will be removed.

a. Concrete Removal/Scarification (Contingent Clean Closure Verification): If the concrete surface does not meet the definition of a clean debris surface per 40CFR 268.45, Table 1 after the removal of 0.6cm of the surface, additional portions of concrete will be removed. To avoid the generation of large quantities of solid waste, concrete removal will be limited to mapped and logged areas that do not meet "clean debris surface requirements". The exact amount material to be removed will be evaluated on a case by case basis and logged in the field log book. Removal methods may entail the use of saws and/or jackhammers. Demolished concrete will be temporarily placed in boxes for characterization and disposal according to waste designation. Roll-off boxes will be properly labeled, lined and covered with plastic liner material.

b. Control of concrete debris will meet the requirements of 173-303 WAC. The concrete will be collected in roll off containers, sampled and then characterized in accordance with Attachment (1) of the MWSF Closure Plan.

3. **General process and precautions.**

a. Safety: Safety precautions will be followed in accordance with 29 CFR 1910 and the direction of the Shipyard's Environmental Safety and Health Office based on the level of constituents detected in the MWSF.

b. Waste: All Containerized dangerous wastes in the MWSF will have been transported to a permitted Storage Facility prior to mapping, photographs, surveys and decontamination.

c. Control of Liquids/Decontamination Residuals: All decontamination residuals or other accumulated liquids used for liquid decontamination process will

be collected with portable wet/dry vacuum cleaners or rags and sponges. The decontamination residuals will then be collected and transferred to temporary holding containers (15 gallon plastic drums). These containers will remain sealed/covered and within a designated area at the decontamination site until sampling and designation is completed. Decontamination residual samples will be collected to determine the best method for disposal of the waste. After obtaining the sample results, the 15 gallon plastic containers will then be labeled.

d. Handling of Residuals: Decontamination residuals may have low concentrations of chemicals (see paragraph 5 of this attachment) that make the residuals suitable for discharge to the sanitary sewer system, discharging procedures for these chemicals will be coordinated through the Shipyard's Environmental Safety and Health Office. Higher concentration residuals which cannot be discharged will be transported to the IWP or Oily Waste Treatment Facility (OWTF)(see paragraph 6 of this attachment). The final disposition of all wastes will be entered into the field log book.

e. Flushing of Hoses: Contaminated hoses and equipment used during the decontamination will be flushed to remove remaining residues and sediments. A minimum of three flushes will be used. The flush water will be collected in the holding container. After a third wash a composite flush water sample will be collected to verify that levels are acceptable. Additional flushes will be accomplished as necessary. The result of these flushes will be entered into the field log book.

f. Handling and Control of Cleaning Equipment: Equipment used during decontamination (e.g., brooms or brushes) will be washed in soap and water. This rinse water will be disposed of with the wash water. If the equipment is heavily contaminated and decontaminating is not economically justified, the equipment will be sampled for constituents of concern and handled as dangerous waste as directed by the Shipyard's Environmental Safety and Health Office. The criteria for disposing of equipment

generated during closure operations is the dangerous waste criteria contained in WAC 173-303-070.

g. A decontamination station shall be established adjacent to any areas requiring decontamination if equipment decontamination will be performed. The station will be constructed from a plastic liner placed on the ground or over a cofferdam. The station shall have a berm of at least 4 inches high. All equipment decontamination shall be conducted in the station.

#### **4. Inspections of Cleaned Surfaces and Equipment:**

After decontamination the area will be inspected to the clean debris surface performance standard. The result of this inspection will be entered into the field log book. If the criterion for clean closure is met no further action is required. A final photo essay will be conducted of the decontaminated area. This final photo essay will be maintained with the closure final report.

#### **5. Criteria for Sanitary Sewer Discharge of Wastewater Generated from Decontamination of an area within the MWSF:**

Process: The affected area will be scrubbed and washed with soap and water.

Quality: Decontamination residuals may be contaminated with Barium, Cadmium, Chromium, Copper, Lead, Silver, Mercury, Acetone, Methanol, MEK, Butyl Alcohol, and Toluene.

#### ***Criteria:***

- The wastewater cannot be a dangerous waste.
- The wastewater has to be below the following limits:

<u>Parameters</u>	<u>Limits</u>	<u>Test Methods</u>
Barium	100 mg/L	EPA 200.7
Cadmium	.17 mg/L	EPA 200.7
Chromium	5 mg/L	EPA 200.7
Copper	5.2 mg/L	EPA 200.7
Lead	1.3 mg/L	EPA 200.7
Silver	2 mg/L	EPA 200.7
Mercury	0.09 mg/L	EPA 200.7
Selenium	1 mg/L	EPA 200.7
PCB	15 ug/L	EPA 608

Oil & Grease	100 mg/L	EPA 413.1
Total Toxic Organics (TTO)	2.13 mg/L	EPA 624

- Summation of all quantifiable values greater than .01 mg/L, i.e, detection limit for individual compound has to be at least .01 mg/L.

The analyses required are Total Metals (Cadmium, Chromium, Lead only, unless other metals are present), PCB, Oil & Grease, and Volatiles.

#### **6. Criteria for Processing of Wastewater Generated from Decontamination of an area within the MWSF:**

If the analysis determines that the limits of paragraph 5 for discharge to the sanitary system are exceeded the Shipyard will process all non-oily dangerous wastes at the IWPF. Liquid wastes exceeding 15mg/L oils or grease wastes will be treated at the Shipyard's Oily Water Treatment System.

## **Attachment GG**

### **MWSF CONTINGENCY PLAN**

**CONTINGENCY PLAN AND EMERGENCY PROCEDURES  
MIXED WASTE STORAGE FACILITY**

**1. General Information**

Name of Facility:	Mixed Waste Storage Facility (MWSF) located at the Puget Sound Naval Shipyard at the Bremerton Naval Complex
Name of Owner and Operator:	United States Department of the Navy
Location of Facility:	Building 1002 Puget Sound Naval Shipyard 1400 Farragut Avenue Bremerton, WA 98314-5001
Emergency Coordinator (Puget Sound Federal Fire Department):	Puget Sound Federal Fire Department, dial 911 (can also activate fire alarm pull stations)
Phone Numbers:	Outside Bremerton Naval Complex or by cellular phone, dial (360) 476-3333
Phone Number of Radiological Control Office:	6-2185 ext 250 or 200  Outside Bremerton Naval Complex, dial (360) 476-2185 ext 250 or 200
Phone Number of Mixed Waste Storage Facility:	6-8970  Outside the Bremerton Naval Complex, dial (360) 476-8970
Phone Number of Mixed Waste Storage Facility Supervisor's Office:	6-2033  Outside the Bremerton Naval Complex, dial (360) 476-2033
Mixed Waste Storage Facility Operations:	Receive, consolidate, and store pre-packaged sealed containers of mixed waste in metal boxes or metal drums
Site Plan	Refer to Figure G-1

**2. Use of the Contingency Plan:**

The Contingency Plan provides response procedures intended to protect human health and the environment in the unlikely event that an emergency occurs involving mixed waste at the Mixed Waste Storage Facility (MWSF or 'facility'). Mixed waste is a mixture of low-level radioactive waste and chemically hazardous waste. Due to the nature of mixed waste generated, and the various structural and operational measures in place to minimize the risk of an emergency situation, an emergency that would result in off-site consequences or require assistance from off-site agencies is highly unlikely.

The MWSF Contingency Plan also provides procedures for handling damaged containers, or containers that might otherwise present a hazard to the public health and the environment. Such conditions may or may not result in an emergency condition.

Naval Nuclear Propulsion Program radiological emergency procedures will be implemented coincident with this Contingency Plan when mixed waste is involved.

### **3. Definitions:**

For the purposes of this plan, the term **"emergency"** refers to a fire, explosion, or sudden or non-sudden release of dangerous waste or dangerous waste constituents to air, soil, surface water, or ground water (whether accidental or from natural disaster). Incidental spills as defined below are not considered emergencies under this plan.

**Incidental spills** of mixed wastes where the substance can be absorbed, neutralized, or otherwise controlled at the time of spill by MWSF personnel are not considered to be emergencies if there is no possible release to air, soil, surface water, or groundwater. For example, a spill within the secondary containment berm of the facility would not normally be an emergency. A spill outside the facility entrance on a paved surface that can be absorbed, neutralized, or otherwise controlled at the time of release by MWSF personnel, so as not to enter soil or water, would also not normally be an emergency.

The **"initial responder"** is the first person on the scene of an emergency.

The **"emergency coordinator"** is the Federal Fire Department Incident Commander, upon arrival at the scene.

**4. Evacuation Procedure (use only when invoked in sections 8 or 9):** The initial responder will notify employees to evacuate by use of the fire alarm and by shouting. Employees will evacuate through the nearest exit (see Figure G-2 Evacuation Plan) and assemble at the Farragut Avenue gate. Primary or alternate evacuation routes consist of exiting the storage area by the most convenient of either of the personnel doors located at both ends of the building or the roll top (vehicle) door located at the North end of the building. Upon exiting, proceed to the assembly area located on Farragut Avenue. The initial responder assumes responsibility until the emergency coordinator arrives.

**5. Internal Notification Procedure (use only when invoked in sections 8 or 9):** The initial responder will notify the Federal Fire Department and the Radiological Control Office as follows:

**a. Federal Fire Department:** activate fire alarm pull station or telephone 911. Dial (360) 476-3333 if using a cellular phone. Upon arrival on scene, the Federal Fire Department Incident Commander (as emergency coordinator) is responsible for coordinating all further emergency response efforts. This responsibility includes ambulance dispatch and communication with Navy and local medical centers and local fire departments.

**b. Radiological Control Office:** dial 6-2185 ext 250 or 200. Outside the Bremerton Naval Complex, dial (360) 476-2185 ext 250 or 200.

**c. Information Required:** the MWSF Supervisor, or in their absence the person who discovered the incident (initial responder), must gather and report to the Federal Fire Department and the Radiological Control Office the following information:

**(SUMMON ASSISTANCE IMMEDIATELY - DO NOT DELAY INITIAL NOTIFICATION TO COLLECT THIS DATA)**

- (1) name and address of the facility;
- (2) time and type if incident (e.g. release, fire);
- (3) name and quantity of material(s) involved to the extent known;
- (4) extent of any injuries;
- (5) possible hazards to human health or the environment outside the facility.

**6. Spill/Release Control Procedure (use only when invoked in sections 8 or 9):** The procedures used to control a container spill or leak at the MWSF are dictated by the potential for spread of contamination. Only those personnel who are specifically tasked, trained, and equipped in proper work procedures are permitted to handle this situation. Other personnel shall limit the response to making the proper notifications and guarding the area from a safe distance until qualified responders arrive. Additional actions to be taken by qualified personnel include:

- (a) Don the appropriate PPE;
- (b) Stop the spill by righting overturned containers;
- (c) Warn others in the area and have unnecessary people leave;
- (d) Control further spread of the spill with dikes or berms and absorbents;
- (e) Isolate the spill area from further entry;

**7. Outside Agency Notification Procedure (use only as invoked in sections 8 or 9):**

If assessment of the event by the Radiological Control Office indicates that mixed waste has been released or will be released to an area outside of the secondary containment (berm) of the MWSF, the Radiological Control Office shall ensure that the agencies (below) are immediately notified with the information listed in section 5.c. above, including the name and telephone number of the reporter and name and address of the facility:

- (1) If the release exceeds the Reportable Quantity listed in 40 CFR 302.4, the Radiological Control Office will contact the:

National Response Center (NRC) 24 Hour Hotline at (800) 424-8802 or (202) 426-2675.

EPA Region X Federal Facilities Manager at 1-206-553-1263.

WA Emergency Management Division (EMD) at 1-800-258-5990

WA Dept. of Ecology Northwest Regional Office Spill/Compliance  
Section at 1-425-649-7000.

NOTE: The reportable quantity table in 40 CFR 302.4 designates releases of certain metals to not be reportable regardless of quantity if the metal released is in solid form and the diameter of the pieces of the solid metal released is equal to or exceeds 100 micrometers (0.004 inches or 0.1 millimeters). Releases of these metals would be reportable thus only if the diameter of pieces released was smaller than 100 micrometers (0.004 inches or 0.1 millimeters) as in a fine powder or as a liquid and if the released metal exceeded the reportable quantity provided in the table.

(2) If the release is not reportable to the NRC (above) but is considered to present a threat to human health or the environment, the Radiological Control Office will contact the:

WA Emergency Management Division (EMD) at 1-800-258-5990

WA Dept. of Ecology Northwest Regional Office Spill/Compliance  
Section at 1-425-649-7000.

(3) A release of 10 pounds or greater of material containing Polychlorinated Biphenyls (PCBs) to water or soil must be reported, independent of other criteria, if the released material contains PCBs at 50 ppm concentration or greater. In this situation, the Radiological Control Office will contact the:

EPA Region X Pesticides and Toxic Substances Branch at  
1-206-553-1918.

(4) Any release reported to outside agency under parts (1) through (3) above must be reported to Kitsap County. In this situation, the Radiological Control Office will contact the:

Kitsap County DEM at 1-360-616-5870 or after hours via CENCOM at  
1-360-478-0011.

## **8. Emergency Response Procedures:**

**a. Fire/Explosion:** Personnel will evacuate following the evacuation procedure of Section 4. Personnel will also initiate the internal notification procedure of Section 5.

(1) The initial responder is to activate the fire alarm and then attempt to extinguish small fires with a compatible fire extinguisher, remaining out of the smoke plume to the maximum extent possible. If the fire is not extinguished after expending one (1) fire extinguisher, personnel are to evacuate the area. If the fire is not small, the initial responder is to activate the fire alarm and immediately evacuate the area. In all cases, personnel are to secure the MWSF

until the Federal Fire Department arrives and continue to execute the appropriate emergency response notification and reporting procedures.

(2) After summoning assistance, the primary concern is assisting injured personnel. Personnel should remain cognizant of the possible presence of radioactive contamination and hazardous gases or vapors in the combustion products of any fire originating in the facility and not undertake any emergency response actions unless they can do so safely.

(3) In the event of an explosion, personnel are to evacuate the area at once, secure the MWSF until the Federal Fire Department arrives, and follow the appropriate emergency response, notification, and reporting procedures contained in this Contingency Plan. After summoning assistance, the primary concerns are assisting injured personnel.

(4) The Emergency Coordinator will support the Radiological Control Office as possible to determine whether outside agency notifications are required. If mixed waste has been released or will be released to an area outside of the secondary containment (berm) of the MWSF, the Radiological Control Office shall ensure that the outside agency notifications of section 7 are completed.

**b. Injuries:** Follow the internal notification procedure of section 5. The initial responder is to assist injured personnel, as required, until medical assistance arrives. Personnel are not to attempt to rescue injured personnel unless they are confident of their ability to do so safely and then only after notifying someone else of their intentions.

**c. Releases/Spills:**

(1) The initial responder will immediately assess the character, source, amount, and extent of the release. The initial responder will initiate the internal notification procedure of section 5. Qualified personnel discovering a leak or spill, such as an initial responder who is qualified to work with the substance that has been spilled, may initiate the Spill/Release Control Procedure of section 6 prior to the arrival of the Emergency Coordinator provided that

- they believe that it is within their capability to safely respond to the spill or leak, and
- another person, not responding to the spill or leak is aware of the incident and monitoring their situation from a safe distance

At the discretion of the initial responder, the initial responder shall direct qualified personnel available to don appropriate personnel protective equipment and attempt to control or contain a small spill using the Spill/Release Control Procedure of section 6. If the initial responder determines it appropriate, s/he will cease spill response efforts and, along with other qualified personnel available, guard the area from a safe distance until the arrival of the Emergency Coordinator. The initial responder shall have all unnecessary personnel evacuate the area by following the Evacuation Procedure of section 4.

(2) Upon arrival of the Emergency Coordinator, h/she will direct an immediate visual inspection of any hazardous substance release by qualified personnel. If not already done, the Spill/Release Control Procedure of

section 6 will be initiated as soon as the affected area is declared safe for entry. Priority will be given to preventing the spread of released material beyond the secondary containment (berm) of the MWSF. The Emergency Responder shall initiate Post Emergency Clean-up efforts as soon as practical when the release event has been terminated.

(3) The Emergency Coordinator will support the Radiological Control Office as necessary to determine whether outside agency notifications are required. If the spill/release is not an 'incidental spill' as defined in this plan, and poses a threat to human health or the environment, the Radiological Control Office shall initiate the Outside Agency Notification Procedure of section 7. Note that section 7 may or may not require specific notifications depending on the quantity of the release/spill and whether a threat exists to public health or environment.

**9. Procedures for the Receipt of Damaged Containers, or Containers that Otherwise are Not Acceptable in the MWSF, but Cannot be Transported:**

(a) The initial responder shall determine an area of the facility where the waste can be safely stored based on container labeling and/or waste profile information and make notification of the situation to the Radiological Control Office.

(b) If a container is damaged, place the container in an overpack or cofferdam capable of containing the contents of the container should it begin to leak.

(i) Incidental spills of mixed wastes where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by MWSF personnel are not considered to be emergencies if there is no possible release to air, soil, surface water, or groundwater.

(ii) Spills/releases that do not meet the definition of incidental spill will be treated as emergency events. The complete Internal Notification Procedure of section 5 and the Spill/Release Control Procedure of section 6 will be initiated. The Outside Agency Notification Procedure of section 7 will also be initiated. Note that section 7 may or may not require notification depending on the quantity or nature of the release/spill and whether a threat exists to public health or environment.

(c) The Radiological Control Office shall contact the generator of the waste for instructions on consolidating the damaged or leaking waste container in an overpack.

(d) If necessary, the Radiological Control Office shall determine an alternate storage facility capable of safely storing the waste.

(e) If necessary, the Radiological Control Office shall direct the preparation of the waste for proper shipment and direct the shipment the waste.

**10. Emergency Equipment:** Refer to Table G-1, Emergency Equipment, and Figure G-1, Site Plan. This Contingency Plan, through reference to section 5, will use the MWSF Fire Alarm for internal notification of all emergency events. This alarm is a high pitched horn. No other alarms are present.

**11. Emergency Coordinators:** The Emergency Coordinator is responsible for being familiar with all aspects of this Contingency Plan, MWSF layout and operations, the location and characteristics of the wastes being handled, and the location and format of MWSF records. The Emergency Coordinator has the authority to commit necessary resources in accordance with the response procedures of Section 4 of this contingency plan. Once notified of an emergency, the Federal Fire Department on-shift Incident Commander (summon by fire alarm or 911) assumes the role and responsibilities of the Emergency Coordinator. Hazard assessment regarding spilled/released material and outside agency communication is coordinated with the Radiological Control Office. Responsibilities of the Emergency Coordinator include:

- (a) on-site and on-call availability;
- (b) familiarity with this Contingency Plan, the MWSF layout and operations, waste locations and characteristics, and location and format of records;
- (c) authority to commit necessary resources;
- (d) activation of alarms and communication systems;
- (e) identification and characterization of the release;
- (f) assessment of public health effects<sup>1</sup>;
- (g) surrounding area evacuation notification<sup>1</sup>;
- (h) prevention of spread or recurrence of the emergency;
- (i) monitor leaks, pressure buildup, gas generation, and rupture of pipes, valves, and other equipment;
- (j) cleanup provisions;
- (k) maintenance of emergency equipment;
- (l) agency notification and reporting<sup>1</sup>;
- (m) incident record keeping; and
- (n) storage of released materials.
- (o) The Emergency Coordinator may delegate action to other Shipyard organizations (e.g., Radiological Control Office) as necessary.

<sup>1</sup>Note: Hazard assessment regarding spilled/released material coordinated with Radiological Control Office. All outside official/agency notification requirements are fulfilled by the Radiological Control Office.

**12. Arrangements with Local Emergency Responders and Providers:** The Shipyard maintains agreements with local Fire Departments to provide emergency services as requested by the Emergency Coordinator. However, outside agencies (such as local Fire

Departments) are not relied upon to provide emergency services at the MWSF, and would be used at the facility only in an unlikely circumstance where federal services were not sufficient. Harrison Memorial Hospital and Naval Hospital Bremerton may be called upon to provide medical services to injured personnel transported to their facilities. During an emergency, the Federal Fire Department provides hospitals with hazard information which communicates an individual's chemical exposure should BNC personnel require medical services from a local hospital.

### **13. Where the Contingency Plan is Kept on File:**

The MWSF Contingency Plan is kept on file at the MWSF, the Radiological Control Office, the Puget Sound Federal Fire Department, Police Department, and Medical Clinic. The Federal Fire Department is provided with detailed information on the amounts and types of waste stored at the MWSF.

As discussed in section 12., outside agencies are not relied upon to provide emergency services at the MWSF, and would be used at the facility only in an unlikely circumstance where federal services were not sufficient. Copies of the contingency plan will be made available to such agencies as needed.

### **14. Follow-Up (post emergency) Actions:**

a) Post emergency actions could involve inventorying the mixed waste, sampling suspect areas for dangerous waste contamination, and clean up and disposal operations.

1) Any material that results from a release, fire, or explosion at the facility will be properly stored, or disposed of. Wastes will be characterized per the Waste Analysis Plan, section C. Wastes will be moved to a less than 90 day accumulation area if storage in the MWSF is not possible during clean-up actions.

2) Any incompatible waste generated as a result of an emergency will not be placed at affected areas in the MWSF until clean-up is completed. This waste would require physical separation by a distance greater than 20 feet from one another on isolated spill control pallets or by using non-combustible partitions which extend 18 inches above and 18 inches to the sides of the containers. During normal operation, no such waste is expected to be present at the MWSF. Prior to a waste being placed in the facility, a characterization is performed by technical personnel familiar with the mixed waste streams currently in storage and qualified to recognize whether a waste stream would be incompatible, ignitable or reactive. This information will prevent the unnecessary generation of such waste.

3) The BNC will ensure that mixed waste remaining at the facility is not stored in an unsafe manner, and that any unsafe condition at the facility is expeditiously repaired. Emergency equipment contaminated with dangerous waste will be immediately replaced with uncontaminated equipment.

#### **b) Reporting:**

The Radiological Control Office shall report the following information to the WA Emergency Management Division (EMD) within 15 days of the emergency event:

- (a) name, address and telephone number of the facility and owner/operator.
- (b) date, time, and type of incident (explosion, fire, etc.)
- (c) name and quantity of material(s) involved;
- (d) extent of any injuries;
- (e) an assessment of actual or potential hazards to human health or the environment, where this is applicable
- (f) estimated quantity and disposition of recovered material that resulted from the incident;
- (g) cause of incident and description of corrective action taken to prevent reoccurrence.

A copy of the report is also sent to the National Response Center within fifteen days if an emergency event has resulted in a release has occurred above the minimal reportable quantity listed in the Code of Federal Regulations, Title 40 Part 302.4.

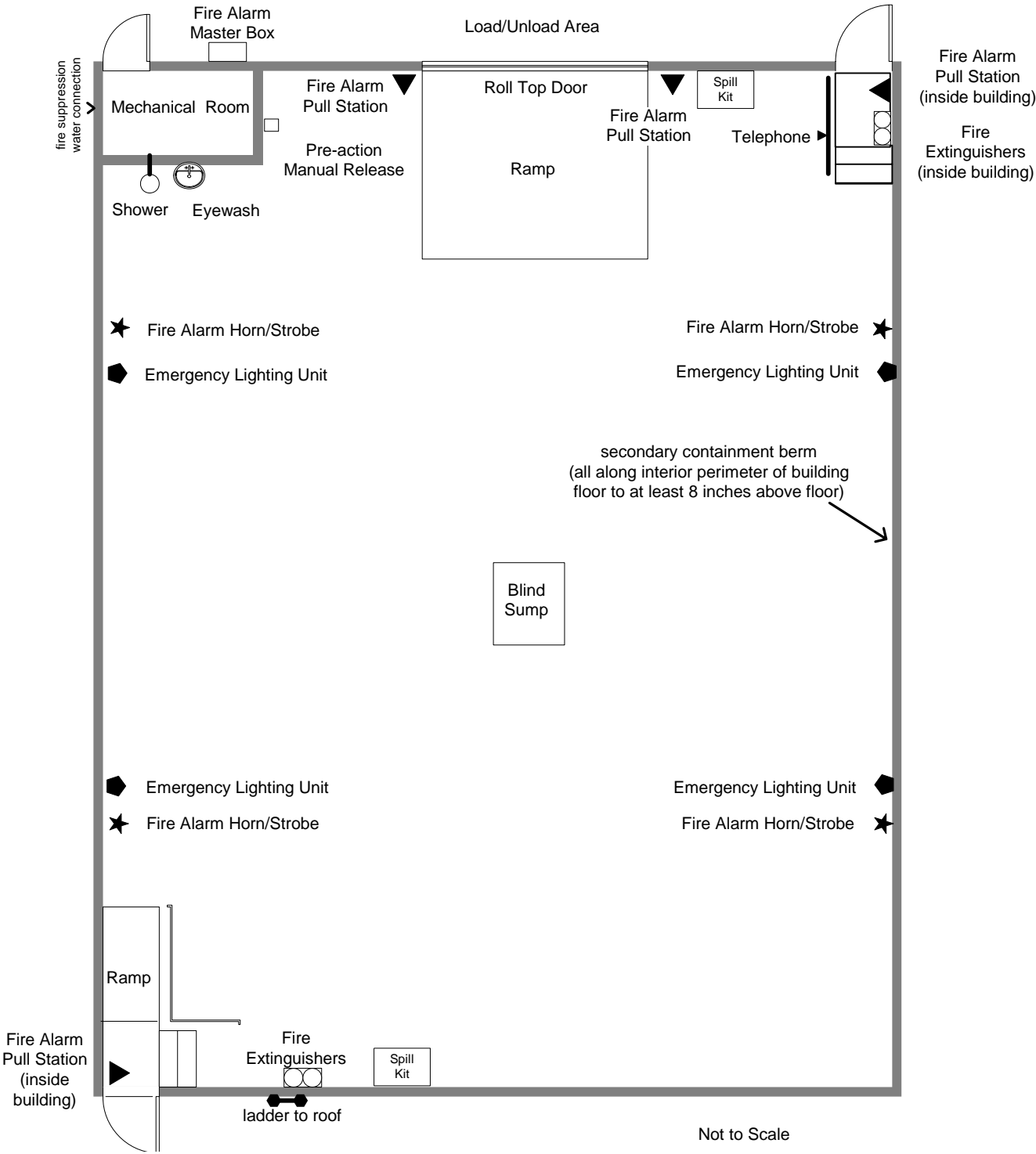
**Table G-1**  
**MWSF Emergency Equipment**

ITEM	DESCRIPTION (QUANTITY) (typical)	LOCATION
Respirators	Full-face respirators (8)	In Spill Kits inside the MWSF.
Goggles	Goggles (splash guards) and/or Face Shields (8 pair)	In Spill Kits inside the MWSF
Boots	Chemical resistant boots (8 pair)	In Spill Kits inside the MWSF
Coveralls	Full cover TYVEK suits (8 pair)	In Spill Kits inside the MWSF
Gloves	Nitrile gloves (20 pair), butyl rubber gloves (24 pair)	In Spill Kits inside the MWSF
Telephone	Telephone (1)	Inside the MWSF
Fire Alarm	Fire alarm pull stations (5) with alarm horn boxes and strobe lights.	Four inside the MWSF and one (Master Control Box) on the exterior front wall
Fire Extinguishers	Portable fire extinguishers (4)	Inside the MWSF
Safety Shower	Combination safety shower/eyewash unit (1)	Inside the MWSF
Spill Control Equipment Kits	Spill kits (2) with absorbent, neutralizers, coagulant, berm material, barrier rope, containment bags, tape	Inside the MWSF
Secondary Containment (berm)	8 inch epoxy coated berm/floor draining to a 2.5' X 2.5' X 2.5' blind sump in center	Berm on the entire interior perimeter of the storage area; blind sump in the center
Vacuum Cleaner	HEPA filtered vacuum	Inside the MWSF
Emergency Lighting	Floodlights with battery packs (4)	Wall Mounted

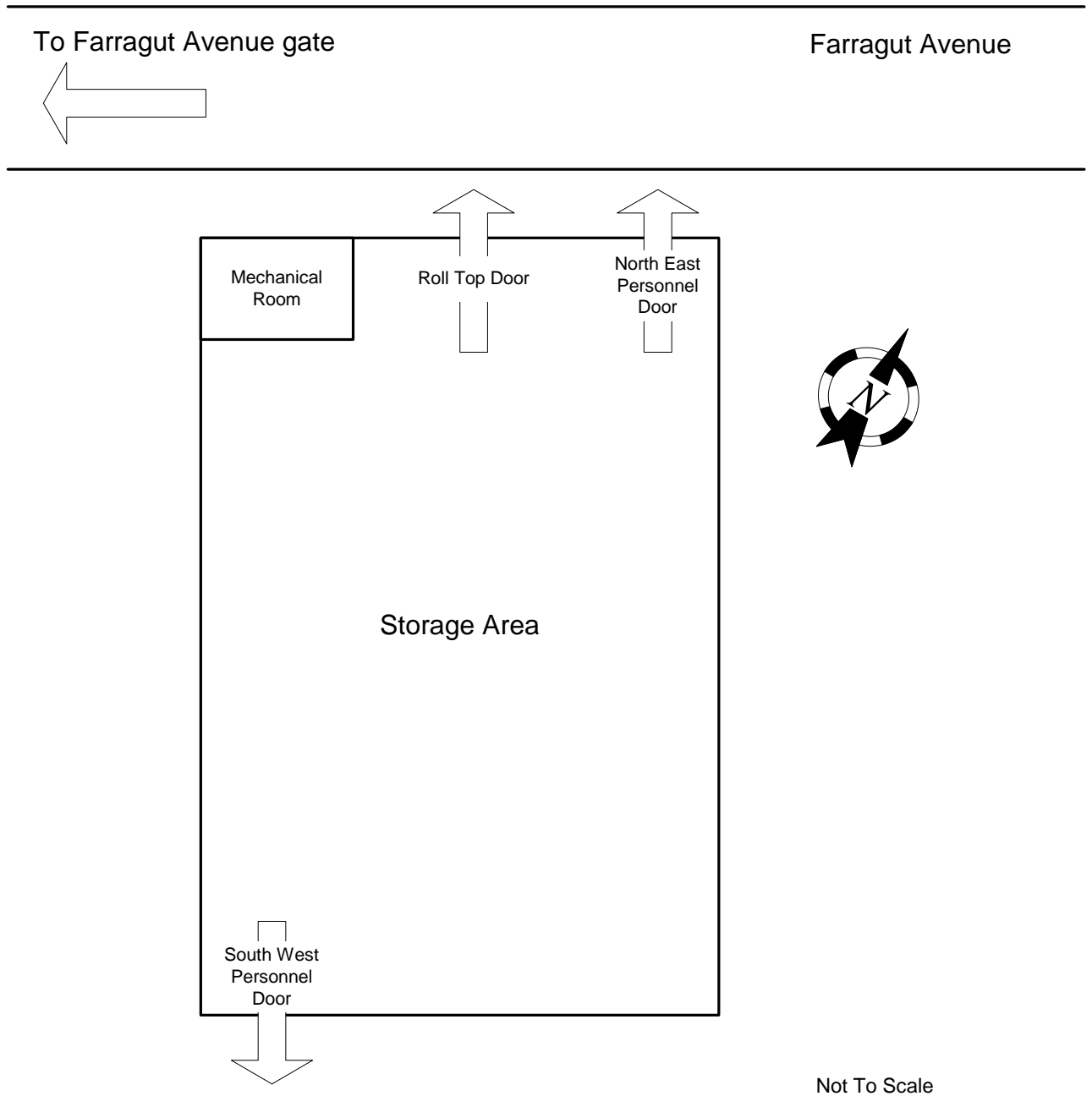
Note: See Figure G-1 for location of emergency equipment

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**Figure G-1**  
**Mixed Waste Storage Facility**  
**Site Plan**



**Figure G-2  
Mixed Waste Storage  
Facility Evacuation Plan**



Exit the storage area by either of the personnel doors located at both ends of the building or the roll top (vehicle) door located at the North end of the building. Upon exiting, proceed to the assembly area located at the Farragut Avenue gate.

## **Attachment HH**

### **Puget Sound Naval Shipyard F-2c Schedule for Remedial Action for Problems Revealed:**

## **F-2c        Schedule for Remedial Action for Problems Revealed:**

The majority of the waste stored at the MWSF is in the solid form. Small amounts of liquid wastes would be stored in leak-tight compatible containers within fifty-five gallon drums or metal boxes. The unlikely event of a leak or spill would most probably occur during off-loading and consolidation operations. A spill event of liquid mixed waste would therefore happen in the presence of facility personnel. The contents of the spill could be easily identified by viewing the label on the damaged container or by referring to the documentation that accompanied the waste shipment.

The following discussion of potential problems may not be all-inclusive. Remedies to non-emergent problems not included on this list shall be as directed by the Radiological Control Office, which shall have overall responsibility for ensuring that remedial actions for problems revealed by inspections are carried out. Unless otherwise noted, the MWSF Operator will perform the remedial actions.

### **F-2c(1)        Spill/Leak from Container:**

If the leak is or may immediately migrate to outside the secondary containment (berm) of the MWSF, the leak is considered to be an emergency event. The Contingency plan of attachment G-1 will be used. The time required to remediate this event varies with the magnitude of the emergency, and post emergency clean-up requirements.

Incidental spills of mixed wastes where the substance can be absorbed, neutralized, or otherwise controlled at the time of release by MWSF personnel are not considered to be emergencies if there is no possible release to air, soil, surface water, or groundwater (e.g., incidental spill inside the facility). These spills would be addressed as follows:

- Upon noticing the spill, immediately stop the spill by uprighting the container, or placing absorbents on the waste such that the spill area does not increase.
- During the shift that the leak is discovered, place the damaged or leaking container in a cofferdam or overpack of sufficient size to contain the leaking container.
- During the shift that the leak is discovered, collect and manage potential mixed waste created during the event. Spilled liquids can be collected by absorbent pads, or pumped into containers stored for later analysis, if necessary. The contained liquids may then be consolidated in a similar container or may be stored in a temporary collection container, as appropriate.

Spills shall be documented in the MWSF operating log.

**F-2c(2) Open or Damaged Container:** Close the container if open. If not possible, or if the container is damaged, replace the container with a container in good condition within the shift. If the container is leaking, follow the procedure of **F-2c(1)** above.

**F-2c(3) Floor Coating Damage:** Repairs should be initiated immediately.

**F-2c(4) Liquid Release not from Waste:** Such liquid could include leaking internal plumbing fixtures such as the facility safety shower and eyewash station. Collect the liquid quickly (within the shift) using manual methods of collection (scoop, absorbents), or a portable pump. The liquid shall be sampled for evidence of dangerous waste contamination. Evaluation and disposition of the liquid should occur within one day of collection.

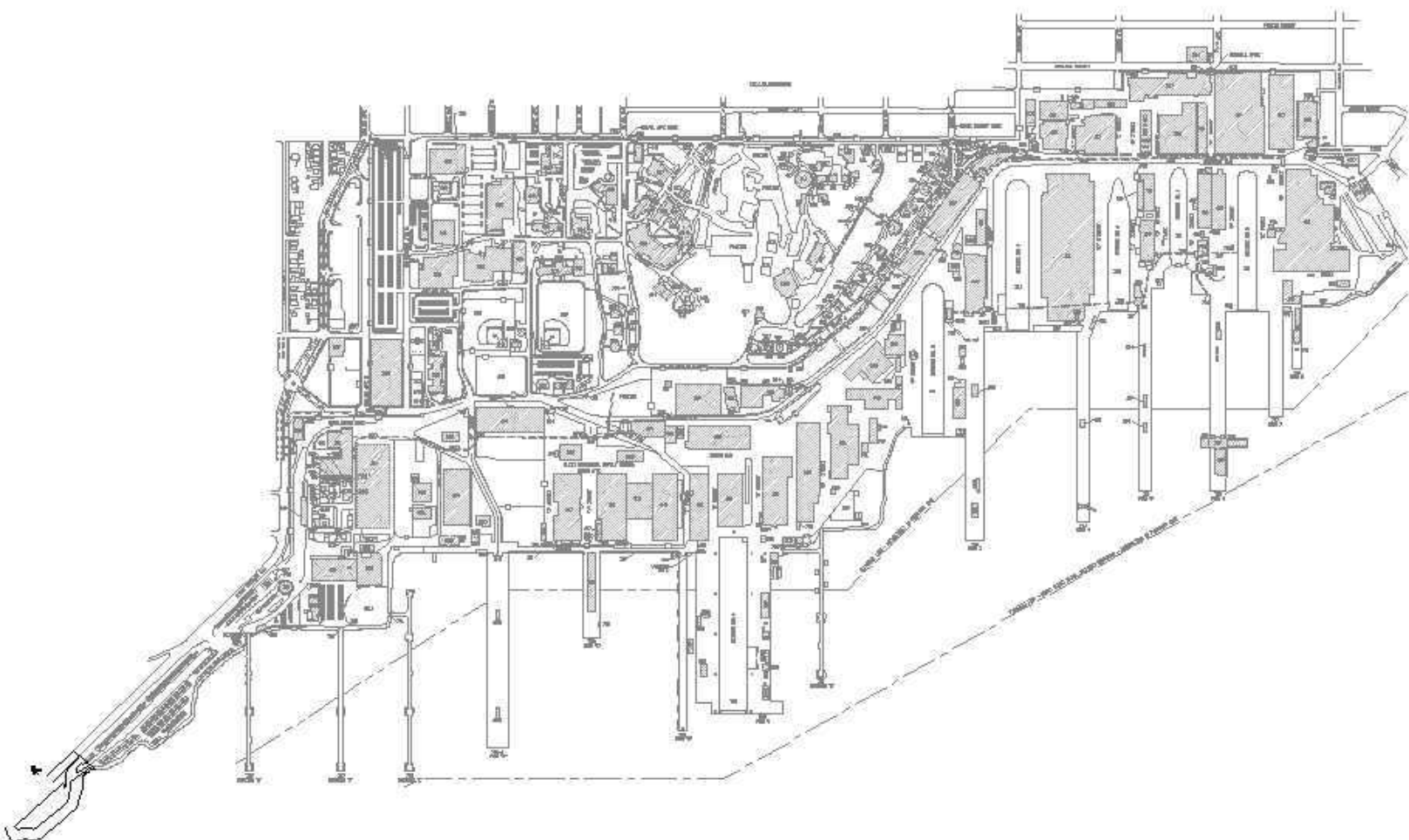
**F-2c(5) Emergency and Warning Signs:** Correct posting/lighting problems within the shift.

**F-2c(6) Equipment** (fire extinguishers, eyewash, and shower, emergency lighting, spill kits (HAZMAT), etc): Repair or replace defective equipment within the shift. The Shipyard fire department (Federal Fire Department) shall be contacted for fire extinguisher replacement. Obtain replacement spill kits or replenish materials within present kits.

**F-2c(7) Utilities** (phone, electricity): If the phone is not functional, obtain a two-way radio. Schedule for repair will depend upon the nature of the problem.

**F-2c(8) Facility structure damage:** Immediate temporary repairs may be required to ensure that the building is secure and that containers are not exposed to the weather. The schedule for permanent repair will depend on the nature of the problem.

**F-2c(9) Building Unlocked when not in use:** Verify that the number of containers present matches the written inventory. Verify that containers are sealed. Inspect containers for evidence of tampering. If there is evidence of tampering, take inventory of container contents. These actions shall be completed within two days.





# EAST END TRANSITION PLAN

